The Veterinary Record

FOUNDED BY WILLIAM HUNTING, F.R.C.V.S., 1888.

No. 10. MARCH 6, 1937. VOL. 49.

The Clinical Examination of Cattle for the Presence of Open Tuberculosis as Practised in the Ostertag Method of Tuberculosis Control and Eradication

GEOFFREY B. BROOK, D.Sc. (EDIN.), F.R.C.V.S.

North America and certain European countries may be divided into two groups so far as the method of eradication of bovine tuberculosis is concerned:—

(*a*) Those countries in which tuberculin testing plays a major rôle from the outset, as, for instance, in Bang's systems and the Manchester Plan (Denmark, Finland, Sweden in part) or the slaughter policy (the U.S.A., Canada, to a limited extent Denmark and Finland).

(*b*) Those countries adopting Ostertag's system (*see* v. Ostertag, 1936), under which all herds must pass through certain preliminary stages before any tuberculin testing is undertaken (Germany, Sweden in part, Switzerland). The essential feature of these preliminary stages is the organisation of a systematic clinical-bacteriological examination of all animals above a certain age with the elimination of those found to be suffering from open tuberculosis.

The question as to whether this expensive and time-consuming Ostertag clinical examination is or is not justified has aroused much controversy. It constitutes the chief—and practically the only—difference between the systems of Bang and of Ostertag. It is the object of this article to review the technique of Ostertag's methods for the diagnosis of open tuberculosis as we saw them in practice in Sweden, Germany and elsewhere.

I.—Examination of the Respiratory System

This will be discussed as follows:—

(*a*) Stimulation of respiration, auscultation, etc.
(*b*) Selection of cattle from which sputum is to be collected.
(*c*) Methods of obtaining the sputum.
(*d*) Examination of samples.
(*e*) Diagnosis in relation to clinical and bacteriological findings.
(*f*) Number of cattle detected with open tuberculosis.
(*g*) Incorrect diagnoses.
(*h*) Relative accuracy and practicability of the methods.

(*a*) STIMULATION OF RESPIRATION; AUSCULTATION

Before auscultation is commenced the respiration is stimulated with the objects of revealing the presence of an otherwise unnoticeable cough, amplifying the lung sounds and rendering abnormal respiratory movements more obvious. The English method of forced exercise is not favoured abroad because it accelerates the action of the heart rather than that of the lungs. Four methods are in common use.

(1) *Fixation of a Rubber Sheet over the Nose and Mouth.*—This method was described by Magnusson (1921): a sheet of rubber tissue some 2 ft. square and about the thickness of a motor car inner tube (Fig. 1) is wrapped around the nose and mouth and held in place by means of a rope (Fig. 2) or an elastic halter (Figs. 3 and 4). When the animal grows restless in an effort to breathe the rubber is removed by releasing the rope or pulling downwards and forwards on the elastic halter (Fig. 4). A sheet of damp chamois skin may replace the rubber.

(2) *Application of a Rubber Cone.*—This, described by Christenson (1935), takes the form of a blunt cone (Fig. 5) fashioned in stout rubber 2½ to 3 mm. thick. It is 30 cm. deep, with an upper circumference of 60 cm. and a lower one of 40 cm. (for use on the bull these measurements are 35, 70 and 50 cm. respectively). The free border is strengthened with an elastic rubber band. The cone is so applied that a dead space is left in front of the animal's nose. The animal is thus enabled to breathe a little air and becomes less restive than with the rubber sheet method. The mode of application is indicated in Fig. 5. The cone is removed when the animal makes obvious efforts to inspire.*

(3) *A sheet of impregnated canvas* carrying rods affixed to two sides in the manner depicted in Fig. 6 was devised by Rautmann and is in use in Germany.† The mode of application is

*Christenson's Cone is made in Sweden by Holger Anderssons Vulkaniserungsverkstad, Simrishamn. Large size 10s.; small 8s.

†Produced by Hauptner, Berlin: shown in Fig. 7.

(4) *An ordinary sack*, soaked in disinfectant solution, was employed by some veterinarians with whom we worked. The open texture of the sacking permits the passage of some air and we thought the method was therefore less effective.

(5) *Pilocarpine or arecoline*, in solution, injected subcutaneously, is mentioned by Regnér (1935), but he condemns the method as unsafe, a verdict which will be endorsed by British veterinarians.

FIG. 1.—A rubber sheet about to be applied to the cow. The assistant is also holding an elastic halter, the use of which is depicted in figures 3 and 4. (Photograph kindly provided by Professor H. Magnusson, Veterinary Laboratory, Malmö.)

FIG. 2.—The rubber sheet applied to the animal and held in place with a rope. (Photograph by Professor H. Magnusson.)

FIG 3.—An elastic halter may be used to retain the rubber sheet. The halter is seen in position on the cow. (Photograph by Professor H. Magnusson.)

FIG. 4.—The rubber sheet is quickly removed by pulling downwards and forwards on the elastic halter by means of attached cords. (Photograph kindly provided by Professor H. Magnusson.)

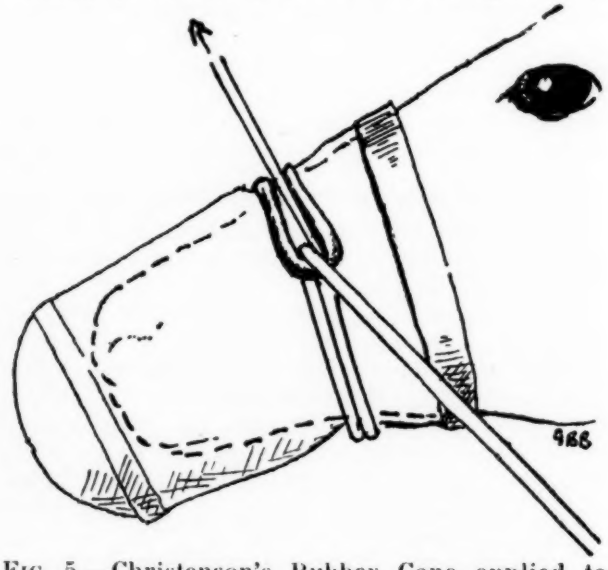


FIG. 5.—Christenson's Rubber Cone applied to the animal and held in place with a rope.

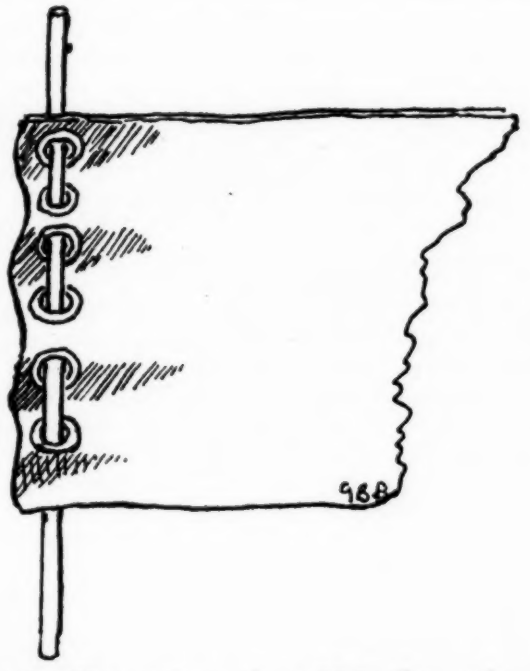


Fig. 6.—The manner in which the rods are threaded through the Rautmann Canvas Stimulator for application as shown in figure 7.

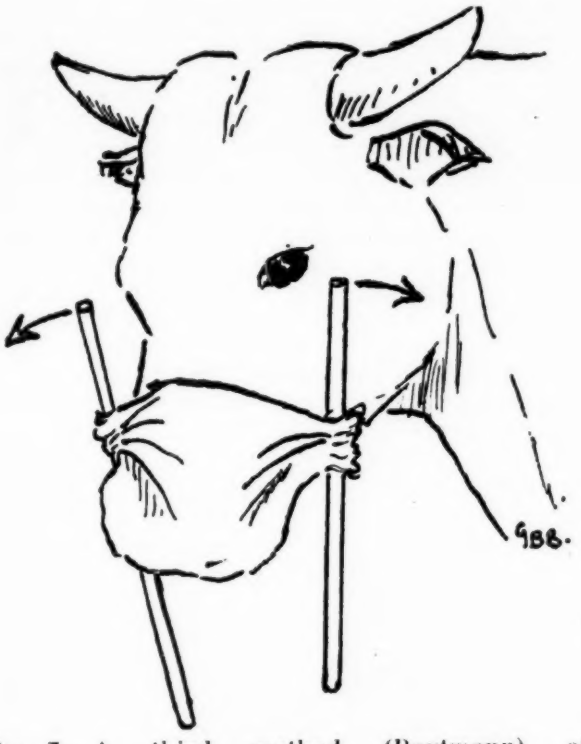


Fig. 7.—A third method (Rautmann) of preventing respiration.

We think that Christenson's rubber cone gives the best results; the cheapness and simplicity of Magnusson's sheet and the ease with which it is cleaned has caused it to be widely employed.

Whichever method is adopted the lungs are auscultated immediately after the removal of the "respiratory stimulator." The presence of a cough and other abnormalities are noted.

Complications. If a "Respiratory Stimulator" is left in position too long or its removal not carried out expeditiously an animal may inflict self-injuries in an endeavour to breathe. We saw an animal dislodge the outer shell of one horn when shaking the head vigorously and another which slipped and fell on its side. These sequelae must be rare if proper precautions are taken. In the bull special control must be exercised because the ring cannot be reached directly. Generally a short rope is passed around the base of the horns. A rope or chain fastened to the ring is passed up the front of the face, through the rope looped around the horns and then used for control.

(*b*) Selection of Cattle from which Sputum is to be Collected

Sputum specimens are taken from any animal:—

(1) Which coughs spontaneously;

(2) Which coughs after the use of the "Stimulator";

(3) In which any abnormalities are detected on auscultation;

(4) In which respiratory movements are not normal (shallow or "flank" breathing; persistence of rapid breathing).

Magnusson (1921) and Jerlov (1928), amongst many, have published statistics to prove that, using the above methods, a cough or abnormal respiratory sounds are frequently present in cattle affected with open pulmonary tuberculosis and conversely a high proportion of animals so affected exhibit a cough and/or abnormalities in respiratory sounds or action. We have selected the following figures because they were compiled from observations on herds in South Sweden where agricultural practice (high milk production, intensive mixed farming, the breeds of cattle and the incidence of tuberculosis (about 40 per cent. by tuberculin test) are similar to those of our Midland dairy districts.

Magnusson's figures:—

One thousand seven hundred and twelve cattle coughed on examination or were reported to be so affected. Sixty-one per cent. had open lung tuberculosis.

One thousand six hundred and twelve cattle coughed and had abnormal respiratory sounds. Seventy-nine per cent. had open lung tuberculosis.

Three hundred and forty-six cattle had abnormal chest sounds but no cough. Fifty per cent. had open lung tuberculosis.

(All diagnoses established bacteriologically.)

Jerlov cites the following:—

Of 401 cattle suffering from open tuberculosis, 83 per cent. coughed after the clinical test and in 95 per cent. some abnormality in respiratory sounds or movement was detected. (Diagnosis established by sputum or *post-mortem* examination.)

Herds were encountered by Magnusson and Jerlov in which a large number of adult animals coughed after the test but were shown not to be affected with tuberculosis. Such endemic coughs of a non-tuberculous nature in adult

cattle are not common but are met in England. The writer has observed the affection amongst cows in the Yorkshire dales. The animals had staring coat, poor condition, and other signs of tuberculosis, but were not suffering from the disease.

An attempt is made to obtain sputum from any animal suspected to be suffering from tuberculosis of the udder or genito-urinary tract. The frequency of co-incident infection of the lung and udder or uterus was stressed by von Ostertag (1913) whose figures are set out below:—

(*a*) In the Netherlands from 1905-1907, 715 animals with udder tuberculosis were examined; 667 (93·3 per cent.) were found to be suffering from open tuberculosis of the lungs.

(*b*) One thousand seven hundred and seven animals were affected with tuberculosis of the uterus; 1,672 (98 per cent.) were simultaneously suffering from open pulmonary tuberculosis. Rautmann (1931) has recently confirmed these figures.

(*c*) Methods of Obtaining the Sputum

The following three instruments are in general use to-day: (1) Rautmann's Sputum Cup; (2) Müller-Bech Direct Tracheal Swab; (3) Tracheal Cannula.

(1) *Rautmann's Sputum Cup.* (*a*) When sputum is coughed up from the bovine lung, much of it is swallowed and some may be recovered from the oesophagus. Instruments for the collection of sputum from this site were devised in turn by Hasenkampf and Tallgren and Graa in Finland and perfected by Rautmann in Germany. Rautmann's sputum cup is depicted in Fig. 8. It consists of a metal cup anchored to a stout wire. The wire which issues from the mouth of the cup is about 2 ft. 6 in. long, hinged in the middle and bent terminally to form a handle.

(*b*) Collection of sputum. Two or three pints of water are administered to the animal to remove gross particles of food from the mouth, pharynx and oesophagus. A "respiratory stimulator" is applied to induce a cough; immediately this has occurred the sputum cup is introduced as far as possible into the oesophagus, moved up and down several times and then withdrawn. The fluid with which the cup becomes filled is decanted into a wide-mouthed bottle of 30 to 50 c.c. capacity. The bulk of the specimen is made up of saliva. Sputum, if present in macroscopical amount, appears as grey—rarely yellow—flocculi or stringy masses more obvious on agitation. If no flocculi are visible in a first specimen a second may be collected with or without the re-application of the "stimulator." Smears prepared from the flocculi more often contain tubercle bacilli if these are present. An endeavour is always made to procure specimens in which visible sputum is suspended.

(*c*) Complications. We have not noted or read of undesirable sequelae.

(*d*) Limitations. No specimens can be obtained unless the animal coughs. Where the "respiratory stimulator" fails the instillation of powdered *Cortex quillaiae* into the naso-pharynx usually succeeds. Stenius in Finland showed us the apparatus depicted in Fig. 9. The catheter is inserted along the floor of one nostril and the powder ejected by compressing the bulb. The use of a long catheter gives the best results. Some veterinarians use the Rautmann cup after preliminary samples have been collected with the Müller-Bech or tracheal cannula (see foot of next page). As might be expected, the oesophageal specimens are then frequently rich in sputum flocculi.

(*e*) Sterilisation. In the laboratory, washing can be followed by immersion in boiling water or soda solution, exposure to steam or dry heat. On the farm boiling water may be used after washing or flaming with a blow lamp or spirit can be adopted.

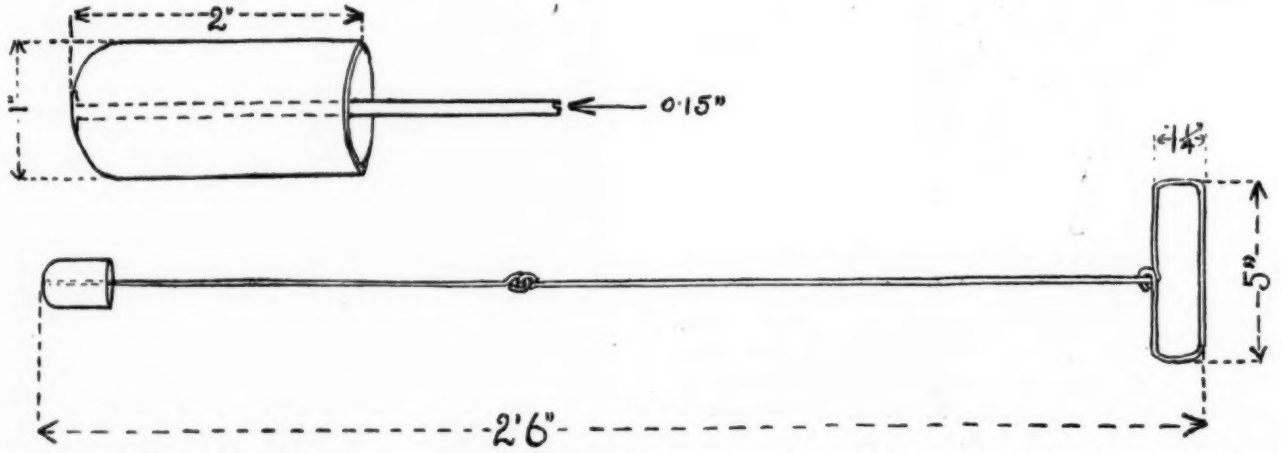


Fig. 8.—Rautmann's Sputum Cup. The drawing in the inset depicts the actual cup with measurements.

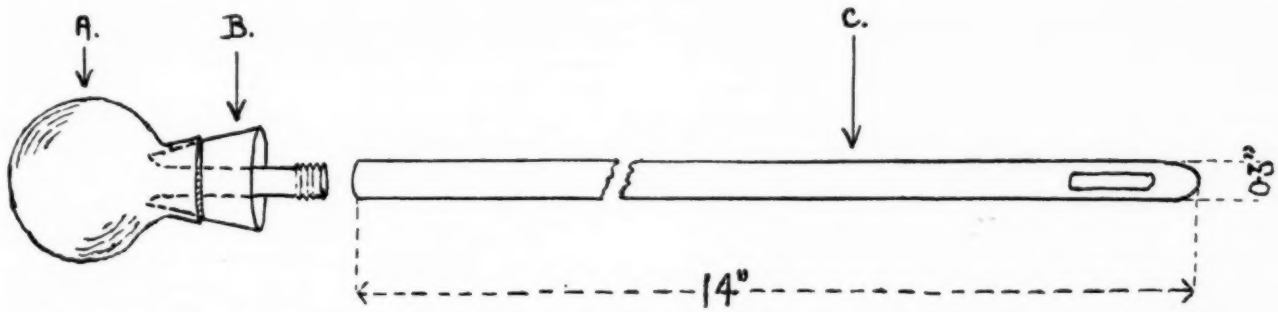


Fig. 9.—Apparatus recommended by Stenius (Finland) for the introduction of Quilla powder into naso-pharynx to induce a cough. A=Rubber ball containing powder. B=Bone mouthpiece. C=Catheter.

(2) *The Müller-Bech Direct Tracheal Swabber.* (*a*) Sputum specimens collected from the oesophagus may be contaminated with food material, whilst the insertion of a cannula through the skin of the neck is often opposed by the owner. For these reasons several German veterinarians attempted to obtain samples of sputum by the use of instruments passed through the larynx by way of the nose or mouth. von Höne (1928, 1930) and Postl (1929) passed swabs along a rubber tube introduced through the nose into the larynx. It was not always easy to enter the larynx, the rubber was difficult to sterilise and contamination of the swabs sometimes occurred. Müller (1932), after rejecting an apparatus by Demke, devised an instrument subsequently perfected by Bech (1934), a Dane. This became known as the Müller-Bech swabber and is in use to-day in the Scandinavian and other countries. It is illustrated in Figs. 10, 11 and 12. It consists of a stout metal tube bent to conform to the long axis of the mouth and throat and loaded with a steel wire carrying a swab. The latter, when not in use, can be withdrawn into the front part of the tube, which is automatically sealed off by a metal ball. The latter is so anchored that withdrawal of the swab pulls the ball into the end of the tube. If the swab be pushed forward the ball is ejected. The ball is retained by a short metal chain. If this becomes twisted the ball cannot be drawn into the proper position. In recent Swedish models the ball is attached by a wire cable which will not twist; in addition, the tube can be unscrewed mid-way and sterilised more easily.

(*b*) The Swab is attached to the wire by means of a screw (Fig. 12); a piece of artificial silk is recommended, either circular (diameter 2·3 in.) or rectangular (2 in. × 3½ in.). A strip of open-wove bandage may be used; it is not so absorbent and it may be pulled off and remain in the lung. In practice a supply of sterile swabs is carried ready for use and handled with forceps.

(*c*) The Insertion of the Instrument. A swab is fixed to the wire, withdrawn into the tube and shut off with the ball in the closed position. The animal is held by one or two assistants so that the nose, but not the neck, is elevated with the head in direct line with the body. "Bulldogs" are helpful. The operator stands on the near side of the patient, level with the nose, and opens the mouth with the fingers of the left hand. The instrument held in the right hand is introduced into the pharynx (Fig. 13). During its passage through the mouth it must be kept close to the hard palate. When the

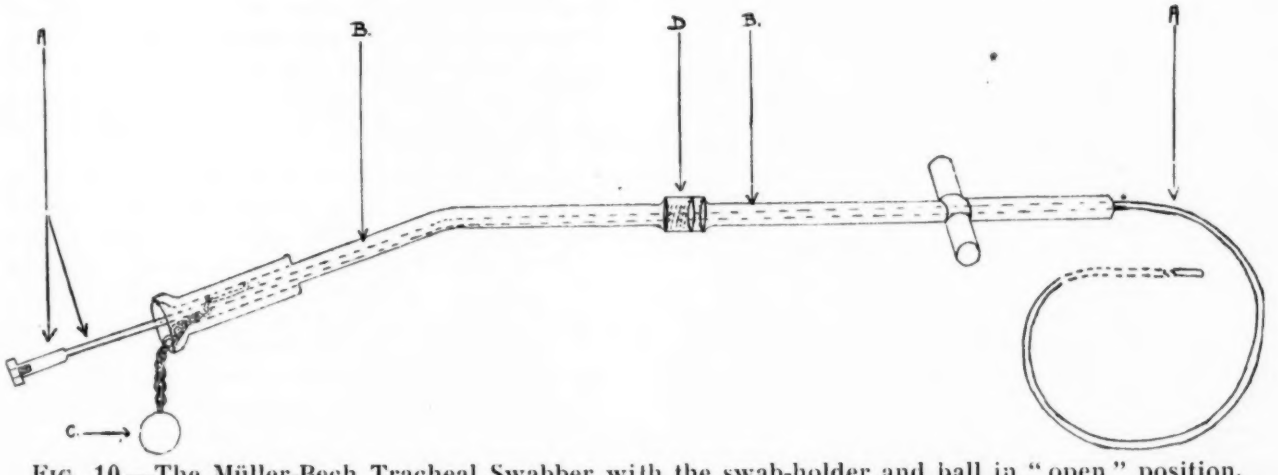


Fig. 10.—The Müller-Bech Tracheal Swabber with the swab-holder and ball in "open" position. A=Wire to carry swab. B=Metal tube. C=Metal ball which shuts off tube when swab is withdrawn. D=Screw junction for dismantling before sterilisation.

front end of the instrument is in the neighbourhood of the larynx the left hand is removed from the mouth and used to grasp the larynx from the outside (Fig. 14). It will be found that by co-ordinating the movements of the two hands the larynx can be led on to the instrument rather than the instrument forced into the larynx. This manipulation requires practice. The operator knows when the trachea has been entered because as the instrument traverses the mucous membrane overlying the cartilaginous rings a characteristic sensation is imparted to the hands. The end of the instrument projecting from the mouth is now grasped by the left hand, leaving the right free to propel the swab down the trachea as far as possible, *i.e.*, about 34 to 45 in. If the wire finds its way into the bronchi of the right anterior lobe, Bech (1934) states that these distances will be about 10 in. less. A spasm of coughing occurs at this stage. The swab is moved gently up and down and then drawn up towards the tube. Finally the wire is given a vigorous pull to bring the swab and the ball into position; this occurs with a characteristic metallic snap. The whole instrument is then gently withdrawn and the animal released.*

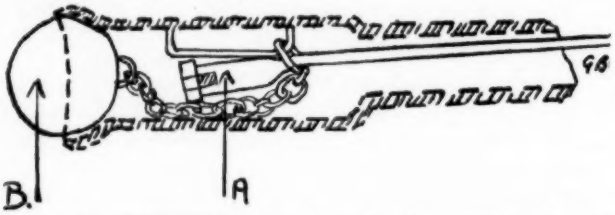


Fig. 11.—The front end of the Müller-Bech instrument in section with the swab-holder (A) and the metal ball (B) in the closed position. The mechanism by which the ball is drawn into position is also depicted.

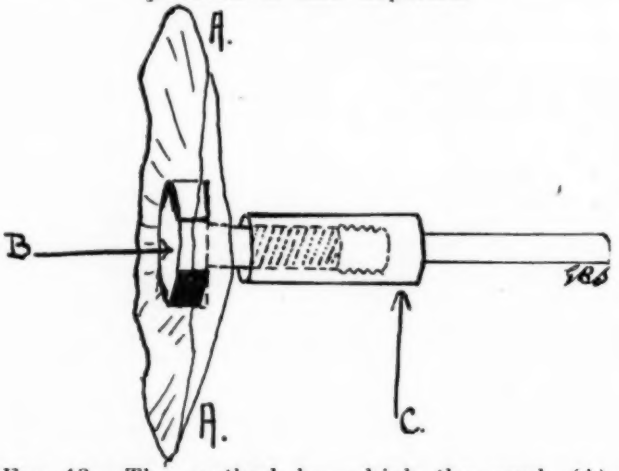


Fig. 12.—The method by which the swab (A) is held in position by the threaded bolt (B) which screws into the head of the swab-holder (C).

*After the vigorous coughing that accompanies the operation it is often possible to obtain especially good samples of sputum from the oesophagus.

The ball is displaced, the swab extended and removed to a bottle similar to that used for Rautmann samples.

Fig. 13.—Position of the patient, assistant and operator during the insertion of the Müller-Bech instrument (first stage).

Fig. 14.—The second stage in the insertion of the Müller-Bech instrument. The left hand is manipulating the larynx to enable the instrument, held in the right hand, to be passed backwards into the trachea.

(*d*) Complications.

(i) Injury to the larynx. Müller (1932) made laryngoscopic examinations and found that a round tube with an external diameter of 2·5 cm. could be passed through the larynx of the adult without injury. In small subjects abrasions were caused. Bech (1934) has recorded puncture of the mucous membrane in an 18-months-old stirk.

(ii) Injury to the trachea, bronchi and lungs. When the swab is introduced into the trachea and bronchi no force must be used. Bech (1934), experimenting with lungs removed *post-mortem*, states that the wire may be directed almost to the centre of a lung without undue pressure. If haemorrhage is caused the swab becomes soaked with blood and the microscopic detection of organisms is rendered difficult.

(iii) Escape of the swab is not likely to occur if material of a dense texture is used unless the nut is not properly tightened. A swab

HAEMORRHAGIC SEPTICAEMIA BACTERIN

(P., D. & Co.)

A BACTERIAL VACCINE prepared from chemically killed undiluted whole cultures of the haemorrhagic septicaemia group of organisms, including *Bacterium bipolaris bovisepticus, ovisepticus* and *suisepticus*.

Haemorrhagic Septicaemia Bacterin is suitable for the prophylaxis and treatment of haemorrhagic septicaemia in all species of domestic animals.

For prophylaxis the dose for cattle, sheep and swine over 100 lbs. in weight, is 5 c.c. For animals under 100 lbs., 1 c.c. may be given for each 20 lbs. of body weight. These doses may be repeated after an interval of two days. Chickens may be given 1 c.c. doses for prevention of fowl cholera.

For treatment of cattle, sheep or pigs, suffering from haemorrhagic septicaemia, the doses indicated above may be repeated every two or three days, as long as indicated.

Haemorrhagic Septicaemia Bacterin (P. D. & Co.) is issued in bottles of 50 c.c. and 250 c.c.

Parke, Davis & Company

50, Beak St., London, W.1

Laboratories : Hounslow, Middlesex. *Inc. U.S.A., Liability Ltd.*

"There's no shadow of doubt" that

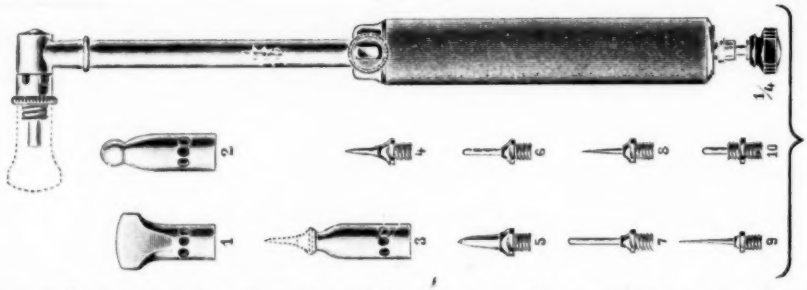
VETERINARY ANTIBACSYN

is the ideal treatment for **ALL FORMS OF SEPSIS**

Ready for Immediate Use—
—Safe—
"Wholly British"—

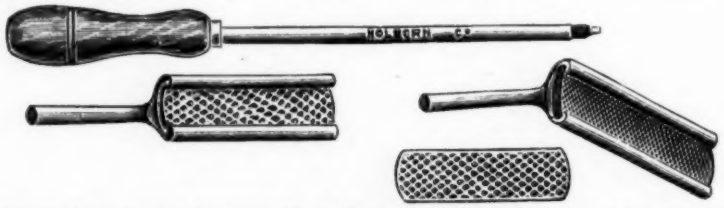
boratories OF ANTIBODY PRODUCTS LTD. Watford Herts.

THE HOLBORN VETERINARY INSTRUMENTS.



R710. **The Holborn Auto-cautery (Dechery's model).** The set consists of the insulated cautery handle, with hatchet shaped point (1) spherical point, (2) four needle points with holder, (3) one spare burner with agate. Plated metal methylated spirit lamp, 4 oz. bottle of Ether Meth., screw spanner, needle for clearing hole in agate and magnifying glass. Price complete in polished oak carrying case **£6 0 0**

R637. **Swale's Mouth Gag** for horses, etc. .. **10/-**



R695. **The Holborn No. 1 Interchangeable Tooth Rasp** with guard, 20 in., nickel-plated with best Sheffield rasp, fine one side and coarse the other, straight or angular **10/-**
Or, both straight and angular, one handle, 2 double rasps, **17/6.** Spare rasps, per doz., **10/6**

R657. **Ivory Stallion Anti-Polution Rings,** round or flat, 1⅝ in. .. **1/9**
Ditto, 1¾ in. .. **2/-** Ditto, 1⅞ in. .. **2/3**
each (inside measurements).

1937 Edition. Catalogue of The "Holborn" Veterinary Instruments, containing over 1,000 illustrations, is now published and will be sent post free on request to any Veterinary Surgeon contemplating the purchase of Veterinary Instruments. THE HOLBORN SURGICAL INSTRUMENT CO., LTD., 26, THAVIES INN, HOLBORN CIRCUS, LONDON, E.C.1.

D

prepared from open-wove material should not be used unless a piece of calico is interposed between the screw and the swab.

(iv) Animals should be under perfect control. Severe injuries might be inflicted if the patient escaped with the instrument in position. We witnessed such an incident on one occasion, but happily the animal was quickly recaptured.

(*e*) Limitations. The introduction of the instrument requires practice and may prove impossible in the restive patient. For several reasons (recent introduction and expense of instrument; difficulty of sterilisation on farm) not many clinicians have had the opportunity to perfect the technique. Svedberg, who supervises the tuberculosis work in the county of Stockholm, said that, with experience, the operation was simple but that particular attention must be paid to the position of the head, ensuring that the nose, but not the occipital region, is elevated. The use of the instrument is easier in the cowsheds of the Scandinavian countries and Germany because nearly all byres are so constructed that the cows face each other in rows separated by an elevated platform adapted to feeding and watering. The cattle are retained by chains or special yokes so that by standing on the platform one is ideally positioned for the operation. In many English cow houses it would be necessary to reverse the animal or transfer it to a special box. Rautmann's sputum cup, on the other hand, could be used on cattle under British conditions quite readily by pulling the head to one side.

(*f*) Sterilisation of the instrument under farm conditions is not easy. The modern types can be dismantled and, after cleansing, placed in an ordinary steriliser. With the other models boiling water may be poured down the tube. The long wire may be treated similarly or dipped in spirit which is then ignited. A supply of sterilised spare wires may be carried if several animals are to be examined.

(3) *The Tracheal Cannula Method.* (*a*) The insertion of a cannula through the tissues of the neck into the trachea for the purpose of collecting specimens was employed by Poëls in Holland in 1886. Poëls cast his patients. Overbech operated in the standing position and later many Germans perfected different instruments (Müller; Scharr and Opalka; Meissner; Bugge). The method is used extensively to-day in Germany. Cameron (1936) has described the operation in this country.

(*b*) The cannulae are of various types and are illustrated in any Hauptner catalogue. In general (i) a cannula should be fashioned with a bayonet point. This makes its way through the inter-cartilaginous tissues with less risk of injury to cartilage; (ii) the stem of the cannula should have as large a calibre as possible, being then easier to clean and sterilise; (iii) if a skin incision is to be avoided a sharp trocar must be fitted. Blunt trocars require force to insert and may enter the trachea with a jerk, cross the lumen and injure the mucous membrane of the opposite wall. Blood-stained swabs will result. The majority of Germans incise the skin and dispense with a trocar. The best instrument with which to incise the skin is a pair of rowelling scissors.

(*c*) The swab is attached to a wire about 3 ft. long. Two types are in general use. The first consists of a piece of one inch open-wove bandage knotted through the terminal loop of a double length of twisted galvanised steel wire (Fig. 15). It can be readily made by unskilled assistants. The second is the one illustrated by Cameron (1936). It is prepared as follows. A light, metal collar is slipped on to a single strand of galvanised wire, the end of which is then bent to form a hook (Fig. 16). A bundle of silk or hempen strands, about 2 in. long, is caught up in the hook, which is then withdrawn into the collar, from which the silk strands project. The collar is compressed in position and to prevent it slipping several waves are put into the wire immediately behind. (Fig. 17).

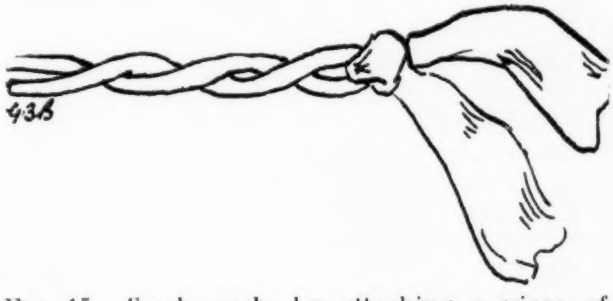


Fig. 15.—Swab made by attaching a piece of bandage material to a twisted steel wire.

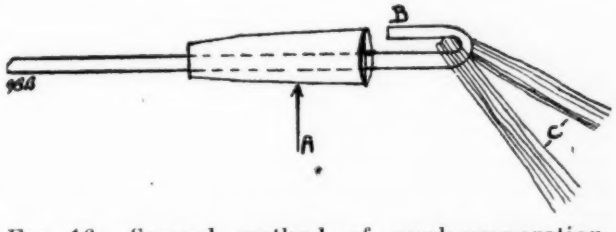


Fig. 16.—Second method of swab-preparation. A collar (A) is placed on a wire which is then turned to form a hook (B) carrying a bundle of silken strands (C).

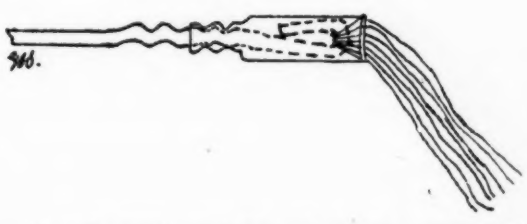


Fig. 17.—Second method of swab preparation. The hook depicted in figure 16 has been withdrawn and the collar clenched in position. The swab and wire are now ready for use.

Both types of swab are sterilised by dry heat in a cellulose envelope prior to distribution in the field.

(*d*) The operation has been described by Cameron (1936). If a trocar is used, the skin is not incised. Several swabs are taken from each animal for laboratory reasons. A separate pair of sterile scissors is required for cutting off the excess wire of each batch of swabs. If only one pair of scissors is available it must be sterilised between each animal. This is time-consuming and unreliable. Thus the Germans in routine work carry a few dozen cannulae, sterile swabs and several pairs of sterilised scissors.

(*e*) Sterilisation of the cannulae is difficult. In the Health of Animals Laboratory for the Berlin area, where 200,000 cattle are examined annually, the cannulae are:—

(i) Immersed for several days in saturated soda solution;

(ii) Placed in boiling water;

(iii) Cleansed with special brush which passes through the lumen;

(iv) Immersed in 0·25 per cent. HCl;

(v) Transferred to methylated spirit bath;

(vi) Sterilised by dry heat at 160° C. for 30 minutes in envelopes and then sealed;

(vii) Dispatched to field workers.

(*f*) Complications are not frequent but the following, amongst others, have been encountered:—

(i) Development of a nodule in the lumen of the trachea of a cow examined *post-mortem* three-and-a-half months after the operation was observed by Svendsen (1934). No symptoms were present before slaughter.

(ii) Development of a nodule in the skin at the site of incision and/or puncture. Bech (1934) describes two instances where three months after operation a tumour the size of an egg developed in the scar. Both enlargements were tuberculous. German workers told us that if skin nodules developed it was often found that the patient was suffering from open tuberculosis despite a previous negative sputum. Bech with his two cases was unable to decide if infection had been transferred mechanically by the cannula or represented a post-operative invasion from the trachea along the puncture tract.

(iii) Emphysema of the tissues of the neck with fatal termination was observed by Larsen and Jensen (quoted Bech, 1934).

(iv) Distortion of tracheal cartilages. During clinical instruction in Germany we palpated the necks of many cattle which had previously been operated upon. In one animal a tracheal ring subjacent to the skin incision had undergone collapse so that its ventral aspect was irregularly concave. Permanent alteration in the outline of the neck had resulted.

(4) *The Spoon and Hand Methods.*—There remain to be discussed these two methods, still useful in emergency, but discarded in general practice.

(*a*) von Ostertag originally collected specimens from the pharynx using a gag and metal scoop.

(*b*) Magnusson (1921) at one time collected sputum with the gloved hand passed direct into the pharynx. Two years later his assistant, Stenmark, adopted the Rautmann sputum cup method. Apart from greater personal convenience and safety the latter gave better results:—

Method	Year	Specimens	Per cent. positive
Direct hand	1911	281	48·0
	1912	370	52·16
Rautmann cup	1913	616	68·0

(*d*) Laboratory Examination of Sputum Samples

(1) *Examination of the Samples Obtained with the Rautmann Cup.*—(*a*) Swedish Technique. The bottle is shaken, the contents poured into a petri dish and if flocculi are seen, as is usually the case, these are picked up and a film prepared and stained Ziehl-Neelsen. If the film is negative ½ c.c. of the remainder of the sample including any flocculi is injected into a thigh each of two guinea-pigs. The inguinal and lumbar glands are palpated at four weeks and if enlarged the pigs are killed for confirmatory diagnosis. If the glands are unchanged a second palpation is carried out at six weeks. If positive the pigs are killed. If palpation is negative the animals are rested 14 days and then re-injected in the opposite leg with material from another cow. No guinea-pig is used more than twice.

(*b*) German Technique. (Rautmann, Halle a/d S.) The sample is transferred to a petri dish and if flocculi are present a film is prepared. If the film is negative or flocculi are absent a double quantity of 1 in 250 aqueous solution of potassium bichromate* is added. The mixture is gently warmed and any mucous strands and flocculi disintegrated by stirring; it is then filtered through gauze into a large centrifuge tube and centrifuged at 3,000 for ten minutes. The supernatant fluid is rejected and a film made from the deposit. This is diluted with saline if the "slide" is negative and 1 c.c. is injected into each of four guinea-pigs which are killed four to six weeks later.

*The bichromate solution is prepared with distilled water or with tap water which has been boiled for one hour. The solution kills out extraneous organisms which might cause intercurrent disease in the guinea-pig; antiformin renders the sample unsuitable for biological examination. According to Schumann (1935) he reported on it in 1930.

(2) *Examination of the Samples Obtained with the Müller-Bech Swabber or Tracheal Cannula.*—The procedure varied in the centres we visited in Germany. A brief account of the different methods is appended.

(*a*) *Halle a/d S.* (Dr. Rautmann). The swabs are detached and immersed in about 25 c.c. pot. bichrom. solution (1 to 250) for 24 hours at room temperature. The fluid is then decanted into a petri dish; the swabs, in another petri dish, are pressed out with the edge of a slide, the fluid and other expressed material being transferred to the first dish. The suspension is then centrifuged (3,000 for ten minutes) and a slide, stained Ziehl-Neelsen, prepared from the deposit. If negative, guinea-pigs are injected as above.

(*b*) *Breslau* (Dr. Schumann). A rather similar technique is employed except that the swabs are immersed in a 1:500 solution of potassium bichromate and kept in an incubator at 37° C. for 24 hours. Films are counterstained with a saturated solution of picric acid. Guinea-pigs are injected subcutaneously in the region of the sternum and are only killed if palpation between four and eight weeks later is positive. Pigs negative to palpation are used for one further test.

(*c*) *Berlin* (Director, Dr. Weislein; superintendent of Tuberculosis Work, Dr. Pagels). Swabs are placed in a test tube two-thirds full of a 1·5 per cent solution of glycerine in distilled water (Scharr Lintz method). The test tube is placed in an incubator at 37° C. for 24 hours. The swabs are recovered and squeezed out, the liquid being then centrifuged for 20 minutes at 3,000 revs. Films are prepared from the deposit and stained using the following counter stain:—

Saturated picric acid solution 1 part
Alcohol ... ... 1 part

If the film is negative half the deposit is injected subcutaneously in the brisket of a guinea-pig. Guinea-pigs are palpated at the fourth, fifth and sixth weeks. If palpation is positive they are killed, but in any case this is done at the end of the sixth week. The second half of the deposit is mixed with a 1:500 solution of malachite green and kept on ice for three weeks for use in case a guinea-pig dies before a diagnosis is possible.

(*d*) *Hannover* (Dr. Karsten). One swab of the series is treated with antiformin and films prepared. The remaining swabs are kept on ice and used for the biological test if the film is negative.

Culture of Sputa.—Not very much controlled work on the culture of *M. tuberculosis* from bovine sputa has been undertaken. Dr. H. V. Hedström working under the direction of Professor Wall at the State Veterinary Laboratory, Stockholm, summarised for us the results of his unpublished work as follows:—

One hundred and seventy-nine samples of sputum which were negative microscopically but *positive* in the *guinea-pig* were cultured on Löwenstein's medium after treatment with 5 per cent. H_2SO_4.

Sixty-seven (37·4 per cent.) were positive; 83 (46·3 per cent.) were negative.

Twenty-nine were so contaminated with other organisms that a diagnosis was impossible.

They concluded that extraneous contamination of bovine sputa occurs so often that good results cannot be obtained.

Plum (1932) examined Müller-Bech swabs microscopically and by culture. The swabs were obtained before death, from cattle consigned to slaughter. This enabled a comparison to be made between laboratory and *post-mortem* findings. One hundred and thirty-five animals showed macroscopic changes in the lungs, the swab examinations from these animals yielding the following results:—

Positive microscopically	60 specimens	= 45·2%
Negative microscopically but positive on culture	33 specimens	= 24·3%
Negative to both methods	42 specimens	= 30·6%
Total	135 specimens	= 100·0%

No control injections into guinea-pigs were made.

(*e*) Diagnosis in Relation to Clinical and Bacteriological Findings

The clinical and bacteriological examinations are conducted with two objects in view. Firstly, that the number of incorrect diagnoses shall be held at a minimum; secondly, that a maximum number of cases shall be diagnosed by direct microscopic examination without recourse to the biological test. Thus in Halle, where over 250,000 cattle are examined annually by four whole-time veterinarians and a panel of 400 general practitioners, the following system is followed:—

(*a*) *If Direct Examination of a Primary Specimen is Positive* the animal is re-examined by a Government Veterinary Surgeon and if symptoms are positive the animal is valued and slaughtered. If symptoms are negative a second sample is taken for examination. If this second sample is positive direct the animal is slaughtered; if negative, a biological test is employed. Thus no animal is slaughtered on a single direct positive unless symptoms are also present.

(*b*) *If the Direct Examination of a Primary Specimen is Negative* a Government Veterinary Surgeon re-examines the animal. If symptoms are negative the animal is released. If the symptoms are positive a second specimen is collected and examined direct. If the second sample is positive the cow is slaughtered; if it is negative it is injected into a guinea-pig. In other words, no sample which is negative direct

from a cow exhibiting symptoms is injected into a guinea-pig until a second specimen has also proved negative. The results of this careful system are seen in the high proportion of direct diagnoses:—

* Year.	Total Positive Sputa.	Direct Diagnosis.	Per cent. Direct.
1935 ...	4,335	3,216	76·5

*(All samples taken by Rautmann sputum cup.)

(*f*) The Number of Animals Detected with Open Tuberculosis

The number of animals discovered by any method depends, of course, on the incidence of the disease. We have, therefore, selected figures from areas with which we are familiar and in which we know the degree of infection to be relatively high but not higher than in the Midland dairy districts of England.

Magnusson (1921) between 1910 and 1920 detected an average of 11·9 per cent. in herds examined for the first time in Sweden. Marcusson (personal communication) gave us the results of the first examination of 10,000 cattle in Middle Sweden between 1925 and 1931. He demonstrated an average animal incidence of from 3·6 per cent. to 8·75 per cent. Wagener (1936) recently examined 888 cattle east of Berlin, the majority for the first time. He found 8·9 per cent. suffering from open lung tuberculosis and exhibiting symptoms.

(*Note.*—The figures of Magnusson and Marcusson include udder and genito-urinary cases but these constituted a very small proportion of the total.)

These percentages are very high when compared with those reported in England. Early in 1935 the writer conducted a first examination of 11,896 cattle in the Uttoxeter district of Staffordshire, according to the English routine. One hundred and forty-seven cases of open tuberculosis were detected (1·23 per cent.). In addition 61 cases were suspected by the owners and confirmed by the writer, making a total of 208 (1·7 per cent.).* Such "reported cases" are, of course, included in the figures of Magnusson and others. We have no doubt that if Ostertag's methods were applied in such an area a greatly increased percentage of open tuberculosis would be discovered. Whether or not such methods ought to be adopted is discussed elsewhere.

(*g*) Incorrect Diagnoses

The clinical-bacteriological diagnosis may fail in two respects. It may not succeed in diagnosing the presence of open tuberculosis when this, in fact, exists; or an animal stated to be excreting tubercle bacilli may be found on *post-mortem* examination not to be affected with open tuberculosis.

In regard to the first group, many workers [Udall and Birch (1915), Seiferle (1929), Schumann (1935), Marcusson (1936), Wagener (1936)] have proved, by taking swabs from all animals, that any of the routine methods we have described fail to detect about 30 per cent. of the total open cases in a given herd. This is due to the facts that some open cases exhibit no detectable symptoms when examined by the Ostertag method whilst others excrete bacilli intermittently.

Wagener's figures (1936) serve as an example.

Total cattle examined.	Animals found to be suffering from open pulmonary tuberculosis.		Animals suspected clinically.	of which were affected with open tuberculosis	Animals not suspected clinically.	of which were affected with open tuberculosis
	Number.	Per cent.				
888	157	17·7	185	79	703	78

When all animals are "swabbed" an unexpectedly high proportion may be found to be excreting bacilli. Wagener (1936) records the following percentages chosen at random: 0·0, 30·0, 77·8, 37·8, 35·5, 0·0, 8·3, 11·8, 22·2, 11·1, 13·6, 5·8.

So far as the second group of incorrect diagnoses is concerned one might say that theoretically it should not exist because the Swedes and Germans must diagnose practically all cattle on clinical *and* bacteriological

*From the Annual Report of the Tiergesundheitsamt, Halle a/d S., for 1935, by the courtesy of Dr. Rautmann.

*These figures are published with the approval of Mr. F. A. Davidson, M.R.C.V.S., D.V.S.M., C.V.O., Staffordshire. They do not include results of examination of herds reported under Section IV of the Milk and Dairies (Consolidation) Act, 1915. Such examinations cannot be termed "routine."

findings.† In practice, however, mistaken diagnoses have been recorded from all centres. It must be recalled that the German and Swedish law concerning the *post-mortem* findings is much stricter than that in England. If open tuberculosis of the respiratory system has been diagnosed it is not sufficient to demonstrate tuberculosis of a bronchial gland or the pleurae. The process must be discovered in the lung substance, trachea, larynx, nasal cavities or sinuses, otherwise the diagnosis is declared incorrect. The methods of clinical examination, examination of the specimens, and *post-mortem* technique vary so widely and are so obviously related to errors in diagnosis that it is unsafe to attempt close comparison. We are only able to review the question on general lines. The number of incorrect diagnoses has been recorded by different workers as follows:—

Reference.	Period.	Total Positive Diagnoses.	Per cent. Error.	Remarks.
1. Plum (1934) ... ... (Copenhagen)	1934	242	2·03	Samples by Müller-Bech; direct, microscopical and cultural examination.
2. Marcusson (1936) ... (Sweden)	1925–35	3,600	1·4	Sputum cup; direct and guinea-pig.
3. Schumann (*)... ... (Breslau)	1935	3,104	0·32	Tracheal cannula; direct and guinea-pig.
4. Pagels (*) ... ... (Berlin)	1935	3,000 (approx.)	1·8	Tracheal cannula; direct and guinea-pig.
5. Rautmann (1931, 1934) (Halle)	1927–32	14,035	2·1	Sputum cup; direct and guinea-pig.

* Figures abstracted from the Annual Reports of the Tiergesundheitsamt in Berlin and Breslau by kind permission of the respective Directors—Drs. Weislein and Schumann.

Marcusson (1936), working in Sweden, has attempted to define the causes of error as follows:—

(*a*) *Post-mortem Inaccuracy.*—The post-mortems are conducted largely by veterinarians engaged in routine meat inspection at central abattoirs. With the great demands made upon their time it is not possible for these men to conduct minute examinations of a large organ such as a lung. Marcusson believes that this has accounted for 78 per cent. of his so-called erroneous diagnoses. Pröscholdt's (1931) observations support this. He examined 101 lungs in which macroscopic lesions were reported absent. Guinea-pig inoculation demonstrated tuberculosis in 30 instances.

(*b*) *Non-pathogenic Acid-fast Organisms* are not infrequently met with in films, especially when a sample has been obtained with a sputum cup. Marcusson believes that with experience they can be differentiated. He suggests that the presence of these organisms may account for the rather high proportion of errors recorded by Rautmann (see above) because 75 per cent. of Rautmann's positive sputa are diagnosed direct whereas Marcusson is only able to determine about 20 per cent. with the microscope. He attributes 4·6 per cent of his own failures to this cause.

(*c*) *"Carrier" Cattle.*—Germans postulate that living tubercle bacilli can be recovered from the respiratory mucosa of healthy cattle if these are in close proximity to actively "open" cases, as for instance a cow expectorating large quantities of sputum, or one with retained "cleansing" after abortion caused by uterine tuberculosis. Plum (1934) had reason to believe that his 2 per cent. margin of error was due to this factor, whilst Pröscholdt and Rautmann estimate the frequency of this occurrence at from 0·6 per cent. to 2·2 per cent. Marcusson, on the other hand, does not believe that it is met so frequently, for the good reason that proven cases are not usually encountered in the healthy section of a heavily-infected herd.

(*d*) *Errors in the Biological Test.*—In certain laboratories—Marcusson's included—for economic reasons it was once the custom to use one guinea-pig for successive samples provided the regional glands were negative to palpation after a certain period. Marcusson admits that this has probably led to mistakes but in recent years he has been enabled to dispense with a pig after a maximum of two injections (left and right thighs), since when errors referable to this appear to have disappeared.

(*e*) *Avian Infection in Cattle.*—Wolters and Dehmel (1931) demonstrated bacilli of the avian type in sputum and in bulk and individual milk. Microscopical, biological and cultural tests were employed, the infection being usually revealed by culture. The affected udders exhibited no macroscopic lesions; whilst the cattle with lung infection showed pulmonary symptoms no mention is made of macroscopic

†In Germany, if an animal is very ill and there is no time to examine specimens it is killed on clinical findings alone: if *post-mortem* examination reveals that the illness was *not* caused by tuberculosis the owner receives *no* compensation. This is the reverse of our own Tuberculosis Order in so far as this type of case is concerned. The German Government does not hold a veterinarian responsible if he is compelled to base his diagnosis on a hurried and restricted examination.

lesions. Thus avian infection may give rise to apparent discrepancies if cultural methods are employed in the laboratory.

(*h*) The Relative Value of the Methods Described

We are not aware of any investigation in which the three methods of sputum sampling have been compared on the same animals at the same time. Nor would this experiment be easy to plan, because the effect of one method upon the results obtained with a second. In general it must be conceded that purer and therefore more suitable samples are obtained with the Müller-Bech and the tracheal cannula than with the Rautmann cup. The opinions of different laboratories are conflicting, but it may be said that if the mouth and oesophagus are properly cleansed and the bichromate solution used, the Rautmann cup samples are almost as satisfactory for biological examination as those obtained by other methods. (This does not apparently apply to culture, for which Plum [1934] declares in favour of tracheal swabs.)

In regard to field practice, we believe the sputum cup to be most suitable. It has three important disadvantages: water must be administered to an animal, the respiration stimulator must be applied twice, and no specimens can be obtained from the cow which refuses to cough.

The Müller-Bech instrument is expensive, difficult to sterilise, and not easy to use. Its virtue lies in the fact that it can be inserted without operation.

The tracheal cannula procedure has only one disadvantage—it is a so-called "bloody" method and would be objected to by the British livestock owner on much the same grounds as it is by the farmer in Denmark and Sweden. Thus it could not be introduced for official routine examination. But we believe it to be the method *par excellence* for the general practitioner or routine field officer if and when the owner himself is anxious to establish a diagnosis and offers no objection to its use.

It is doubtful whether any of the methods could be legally employed in the official routine or special herd examinations carried out under present-day regulations.

II.—Examination of the Udder

The examination of the udder for the presence of tuberculosis does not differ materially from the procedure followed in England. The taking of sputum samples simultaneously has been mentioned (p. 282).

Most samples of milk are preserved in transit by the addition of one gramme of boracic acid or 2 c.c. of 2:1,000 aqueous potassium bichromate solution per 100 c.c. These reagents are placed in the sterile bottle before dispatch from the laboratory.

Blood complement tests are employed in some centres. In Breslau the opinion was expressed that although the test was positive only when the disease was progressive in the animal body as a whole it was nearly always positive when the udder was involved. The method was used in practice as follows:

(*a*) When examining cattle producing a special graded milk (*Markenmilch*) a blood test of all the cows was conducted. An animal which gave a positive test was specially examined (sputum; milk).

(*b*) If in routine work a cow had positive symptoms and negative sputum but the complement fixation was +++ or ++ the animal was slaughtered under a special system (*Beschleungtes Verfahren*).

Bulk biological tests are carried out on all herds three times per year. We have studied the records of self-supporting farms and find that the veterinarian working under Ostertag's system detects clinically about 50 per cent. of all tuberculous udders during any one year.

III.—The Examination for Tuberculosis of the Genito-Urinary Tract

Tuberculosis of the genito-urinary tract in general and of the uterus in particular is looked on as a dangerous source of infection to other cattle (Regnér, Magnusson, von Ostertag, etc.). The discharge from such cases is particularly rich in bacilli, a fact reflected in statistics by the great proportion of cases diagnosed by direct microscopical examination. Any animal with retained foetal membranes, vulval discharge, or vulval enlargements, or having a history of failure to breed is submitted to special examination and any necessary samples collected. In Germany the staff controlling tuberculosis work are also in charge of the State Scheme for free treatment of all cattle which fail to breed. The rectal examinations and uterine catheterisations necessary in such work have led to the discovery of many cases of uterine tuberculosis. Thus in Breslau the incidence was 0·04 per cent. in 1935. In Sweden all congenital tuberculosis must be reported from slaughterhouses and the mother cow traced for examination.

In general the uterus of the suspected cow is catheterised and discharge collected directly from the catheter (Fig. 18) or by the insertion of a swab through the instrument.

The samples of uterine discharge are treated in much the same way as sputum, but methylene blue is used as a contrast stain for films. In one centre, if a direct film was negative the sample was divided into two parts. One part was mixed with 15 per cent. antiformin, filtered, centrifuged, and examined direct. The other half was reserved for biological examination if required.

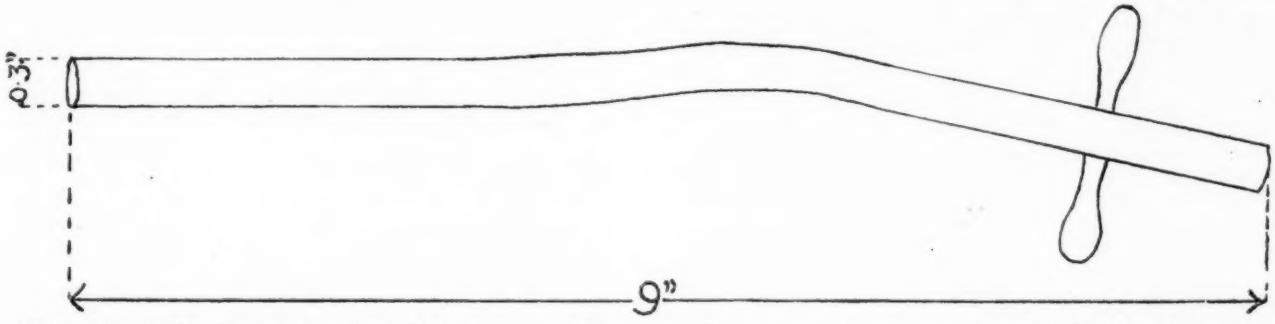


Fig. 18.—Schumann's Uterine Catheter. A cheap easily cleaned instrument for collection of pus from the bovine uterus.

IV.—The Conduct of the Ostertag Clinical Examination in Practice

One veterinarian can examine about 50 cattle per day. Sputum instruments, swabs and bottles are carried in a special case. The cattle over a certain age (Sweden two years, Germany one year) undergo a general examination and the respiration stimulator is applied to each animal. The requisite specimens are then collected. Specimens are examined in laboratories under the charge of veterinarians, under whom lay assistants undertake as much of the laboratory and clerical work as possible, the principle being to keep the veterinary officers employed in the field and not in an office or laboratory.

V.—The Use of Ostertag's Clinical Examination in Britain

(*a*) We concluded that it is unnecessary, and probably impracticable, to substitute the Ostertag for the present English clinical examination, even where tuberculin testing and total eradication is the objective. Our reasons for arriving at this decision do not come within the scope of this article.

(*b*) Von Ostertag's methods are important to all practitioners concerned with cattle practice. The greater precision of diagnosis is an aid to the veterinarian who is combating diseases from which tuberculosis must be differentiated. This raises the problem of cheap and nation-wide laboratory services for practitioners. The Swedish and German farmers have set up their own co-operative veterinary laboratories. Are the county councils of our agricultural counties destined to play a similar rôle?

(*c*) In routine herd examinations the collection of sputum from the wall in front of the cow is not applicable in summer when cattle are "out," and not at all in certain areas, where the cows are at pasture all the year round. In these circumstances the Rautmann cup method might be of value to veterinary officers were they empowered to use it.

(*d*) Under the Tuberculosis Order the Veterinary Officers of the Ministry of Agriculture are the consultants to the county tuberculosis services when objection to slaughter is lodged and a diagnosis contested. The attested herds are also placed in the keeping of this staff. We believe that the Ostertag technique may be of use to these officers.

(*e*) The Swedes and Germans have employed the methods in an endeavour to trace the cause of "setbacks" of obscure origin in tested herds. In such instances the "open" case which failed to react has been tracked down.

Such examples do occur to an unknown extent in this country. We, personally, can recall two —one in Berkshire and a second in Yorkshire— self-supporting herds in which after a period of several years' freedom from tuberculosis about 40 per cent. reactors were suddenly detected. No explanation could be advanced and the owners resigned from the list of producers of certified milk. It is reasonable to assume that the more testing is undertaken the more often will such agricultural calamities confront the veterinary staffs. We believe that these methods, which have helped and are still employed abroad, can be of use in this country, the better to define the avenue by which infection has re-established itself.

Acknowledgments.—This article has been prepared as part of a report on a study of the eradication of bovine tuberculosis undertaken during the tenure of a Dorothy Temple Cross Fellowship awarded by the Medical Research Council.

It would be impossible to mention the names of all the veterinary surgeons in Sweden, Finland, Denmark, Germany, Switzerland and North America who helped us during our visit. We wish to thank them sincerely for their kindness, for the readiness with which they furnished information and, not least, for the arrangements which were made to convey us to and from field work.

References

Bech, J. L. (1934.) Udtagelse af Lungeslim-prøver hos Kvaeg. [The Collection of Sputa from Cattle.] *Maanedsskr. Dyrl.* **46**. 322-334.

Cameron, J. (1936.) A German Method of Collecting and Examining Bovine Sputum. *Vet. Rec.* **47**. 1307-1308.

Christenson, I. (1935.) En Metod för Effektiv

Respirations hämning vid Undersökning a Lungtuberkulos hos Nötkreatur. [A Method for the Effective Retardation of Respiration on Examination for Pulmonary Tuberculosis in Cattle.] *Svensk Vet.-tidskr.* **40.** 13-21. (5 figs.).

VON HÖNE, H. (1928.) Ein Unblutige Methode zur Entnahme von Lungenschleimproben aus der Trachea. [A "Bloodless" Method for the Recovery of Sputum Specimens from the Trachea.] *Tierärztl. Rdsch.* **34.** 390-391.

VON HÖNE, H. (1930.) Die Modifitzierte Luftröhrensonde, ein Instrument zur Unblutigen Entnahme von Lungenschleim proben. [The Modified Tracheal Sound, an Instrument for the Recovery of Sputum Samples by Bloodless Method.] *Ibid.* **36.** 316-317.

JERLOV, S. (1928.) De Kliniska Undersökningarna som Komplement till Tuberkulinprövningen vid den Bangska Metoden. [The Clinical Examinations as a Complement to Tuberculin Testing in the Bang Method.] *3je Nordiska Veterinärmötet.* 869-897. Oslo, Kølbelske Bog og Kunsttryckeri.

MAGNUSSON, H. (1921.) Inledningsföredrag. [Introductory Address.] *2ra Nordiska Veterinärmötet.* Stockholm. Vart Lands och Folks Tryckeri.

MARCUSSON, E. (1936.) Om Feldiagnoser vid Klinisk-Bakteriologisk Undersökning pa Tuberkulos. [On Incorrect Diagnoses in the Clinical-Bacteriological Examination for Tuberculosis.] *Svensk Vet.-tidskr.* **41.** 1-16.

MÜLLER, J. (1932.) Die Entnahme von Trachealschleim auf Oralem Wege beim Rinde. [The Recovery of Tracheal Mucus by Way of the Mouth in Cattle.] *Deuts. tierärztl. Wschr.* **40.** 438-441. 5 figs. (7 refs.).

VON OSTERTAG, R. (1913.) Die Bekämpfung der Tuberkulose des Rindes. [The Control of Bovine Tuberculosis.] Berlin. Schoetz.

VON OSTERTAG, R. (1936.) Grundsätzliches zur Frage der Bekämpfung und der Tilgung der Tuberkulose des Rindes und zur Frage der Uberleitung des Bekämpfungsverfahrens in das Tilgungsverfahren. [Fundamental Considerations in the Control and Eradication of Bovine Tuberculosis and in the Transition from Control Plans to Eradication Campaign.] *Zschr. Fleisch- u. Milchhyg.* **46.** 121-128 and 145-153.

PLUM, N. (1934.) Bemaerkninger i Anledning af Foranstaaende Meddelelse om Udtagelse af Lungeslimprøver. [Observations in connection with the foregoing article on the Collection of Sputa.] *Maanedsskr. Dyrl.* **46.** 335-339. (2 refs.). [Obs. This article is complementary to that of Bech (1934).]

POSTL, E. (1929.) Die Bronchialschleimentnahme mit der Neumannschen Nasensonde. [Recovery of Bronchial Mucus with Neumann's Nasal Sound.] *Arch. f. Tierheilk.* **59.** 82-84.

PRÖSCHOLDT, O. (1931.) Zur Diagnose der Offenen Lungentuberkulose des Rindes. [On the Diagnosis of Open Tuberculosis in Cattle.] *Deuts. tierärztl. Wschr.* **39.** 535-541.

RAUTMANN, H. (1931.) Vorschläge für den Ausbau der Diagnostik im Freiwilligen Rindertuberlosetilgungsverfahren. [Suggestions for the Elaboration of Diagnostic Procedure in the Voluntary Tuberculosis Eradication Scheme.] *Deuts. tierärtzl. Wschr.* **39.** 529-535.

RAUTMANN, H. (1934.) 30 Jahre Rindertuberkulosebekämpfung in der Provinz Sachsen mit Besonderer Berücksichtigung der Tuberkulosestatistik für das Jahr 1932. [Thirty years of Tuberculosis Control in the Province of Saxony with Special Statistical Review for the Year 1932.] *Deuts. tierärztl. Wschr.* **42.** 369-373.

REGNÉR, G. (1935.) Handledning vid Bekämpande och Förebyggande av Tuberkulos i Ladugarden. [Instructions for the Control and Prevention of Tuberculosis on the Farm.] Upsala. Almqvist och Wiksells Boktryckeri A.-B.

SCHUMANN (1935.) Vorbehandlung der Bronchialschleimproben mit Kaliumbichromat. [Preliminary Treatment of Sputum Samples with Potassium Bichromate.] *Deuts. tierärztl. Wschr.* **43.** 84-85.

SEIFERLE, E. (1929.) Ueber die Bekämpfung der Rindertuberkulose. [On the Control of Bovine Tuberculosis.] Inaug. Dissert. Zürich. Buchdruckerei J. Weiss. Affoltern a/A.

SVENDSEN, A. (1934.) Aaben Lungetuberkulose Blandt Tilsyneladende Sundt Kvaeg der har Reageret for Tuberkulin. [Open Tuberculosis in Apparently Healthy Cattle which have Reacted to Tuberculin.] *Maanedsskr. Dyrl.* **46.** 381-399.

UDALL, D. H., and BIRCH, R. R. (1915.) The Diagnosis of Open Cases of Tuberculosis. *Rep. New York State Vet. Coll.* 1913-1914. 55-105. J. B. Lyon. Co. Printers. Albany, N.Y.

WAGENER, K. (1936.) Untersuchungen über die Leistungen des Freiwilligen Tuberkulosbekämpfungsverfahrens. [Investigations into the Results of the Voluntary System of Tuberculosis Control.] *Tierärztl. Rdsch.* **42.** 863-866 and 883-886.

WOLTERS, K. L., and DEHMEL, H. (1931.) Ueber das Kulturverfahren zum Nachweis von Tuberkelbakterien, Besonders in Gesamtmilchproben. [On Experience with Culture in the Demonstration of Tubercle Bacilli. Especially in the Bulk Milk Samples.] *Zschr. Infektkr. Haust.* **39.** 102-114.

ADRENAL DEGENERATION IN A PURE STRAIN OF MICE SUBJECT TO MAMMARY CANCER

W. Cramer and E. S. Horning, Imperial Cancer Research Fund workers, write, in the issue of *Nature* for January 30th, 1937, that they have observed as a regular occurrence spontaneous degenerative changes in the adrenals of both males and females of a genetically pure strain of mice. The strain is the *R* III strain obtained by Mme. Dobrovolskaia-Zawadskaia of the Institut du Radium in Paris as the result of brother and sister mating and maintained in their laboratory in this way for the last three years. The degenerative changes in the adrenals are progressive, and when fully developed at the age of about one year are massive and involve both cortex and medulla. The degenerative changes are of a specific kind and have never been seen by them to occur spontaneously in the adrenals of mice of mixed strains up to one year of age, of which they have examined more than a thousand.

The following considerations add to the interest which these findings may have from the point of view of genetics: (1) The genetically pure strain *R* III in which these degenerative changes occur has a high incidence of spontaneous mammary cancer in the females. (2) In the males of this strain, which never develop mammary cancer spontaneously, a high incidence of mammary cancer can be induced by the continued administration of oestrin. (3) The degenerative changes in the adrenals, which set in spontaneously in the mice of the *R* III strain, are identical with the degenerative changes in the adrenals which they have recorded* as developing regularly in male and female mice of mixed strains after the continued application of oestrin.

A detailed account of these observations will be published soon.

**The Lancet.* i. 247. (1936.)

What is Good Farming? A Veterinary Viewpoint*

R. G. LINTON, Ph.D. (EDIN.), M.R.C.V.S.
Professor of Hygiene and Dietetics,
Royal (Dick) Veterinary College, Edinburgh

If you are readers of agricultural papers, and one may assume that you are, you may have noticed in an issue of the *Farmers' Weekly* a contribution by Mr. Orwin in which he expresses his views as to what he considers to be the essentials of good farming. This was later followed by the opinions of numerous other farmers and I was interested to note that in only one of the contributions was any reference made to livestock. This single reference, however, though short was definitely to the point; it was to the effect that farmers should keep healthy stock. With this, of course, we are all in agreement because livestock farming cannot be carried on successfully with unhealthy animals, and inasmuch as the maintenance of healthy flocks and herds is dependent upon close co-operation between the farming and veterinary professions, as well as upon the knowledge each may possess of their particular jobs, a clear and sympathetic understanding is desirable between them if animal husbandry is to be carried on at a reasonably high level.

I doubt if anyone will disagree with me if I suggest that both the farming and veterinary professions could do more than is being done to prevent the losses due to disease among our livestock, and for the purpose of expanding this line of thought I should like to state first of all where I think the farmer himself might effect some improvements in the manner in which he carries on his animal husbandry.

It is, of course, perfectly true that there are many farmers with very high ideals of animal husbandry and possessing at least a working knowledge of veterinary hygiene. On the other hand, is it not also true that a great many farmers have quite a lot to learn about the basic facts concerning the proper housing, feeding and general management of the animals they own?

Most of the farmers I have met—excluding, of course, those who have recently attended classes in veterinary hygiene in agricultural colleges—seem to lack even the most elementary knowledge of the manner in which infectious and contagious diseases are spread, from one animal to another on the farm, from farm to farm and from market to farm. While it is undesirable to make any man "disease conscious" I think that the farmer should at least understand the general principles underlying the maintenance of health and the methods by which infection is carried. If this could be achieved we might see more "good farming" in and around the animal houses; fewer of those cesspools euphemistically called ponds. It is inconceivable to me how any farmer in the present age of education can permit his cattle, including cows, to stand in these receptacles of liquid filth and to drink an infusion of the faeces of the animal in front. Surely no man can be called a good farmer until he has taken some steps to provide the beasts with clean uncontaminated water and has moved his dung-heap just a little bit further away from the dairy and has had it so constructed that the seepage does not drain across the roadway. Surely the farmer of to-day ought to realise that it is hopeless for him to attempt to prevent the spread of disease, such as tuberculosis, abortion and Johne's disease, so long as the beasts have to drink a contaminated water supply. As an Englishman it is not pleasing to have to admit that the Scotsman is a much better livestock farmer than the Englishman, and I think it is generally recognised that the comparative freedom of Scotland from Johne's disease is due, at least in part, to the relative absence of dirty ponds. As the provision of a clean water supply is one of the essential qualifications of good farming, so also is the provision of good and suitable houses and here it seems to me that farmer and veterinarian meet on common ground in recognition of the unsatisfactory nature of the usual farm buildings. This is not the farmers' fault but that of previous landlords who unhappily were not bungaloid builders but built for perpetuity. The result is that the farmer of to-day has to do what he can with badly designed, cold, draughty, ill-lighted and often quite unsuitable and inconveniently placed buildings. Changing conditions of farming from one decade to another produced alterations in structure which have often added to the general confusion. So that when we suggest that the careful farmer should isolate a newly-purchased or a sick animal, or segregate his positive reactors from his clean beasts, we know that such advice is but too often merely the essence of fatuity. Thus our endeavours to prevent the spread of disease are often frustrated at the outset.

I cannot help feeling that when the reconstruction and improvement of cowsheds began as a result of the passing of the Milk and

*Paper presented at the Annual General Meeting of the Yorkshire Division, N.V.M.A. held in Leeds on January 29th, 1937.

Dairies Act, too much attention was focused on clean milk production and too little on the comfort and health of the herd, and by herd I include the young stock. It is not good farming to have an elaborate cowshed containing hanging baskets of artificial flowers while the young stock are ill kept and badly housed. The construction of cowsheds is not, therefore, a matter which should be controlled by the Medical Officer of Health and Sanitary Inspector. The primary aim in good dairy farming ought to be to rear and maintain healthy stock—the production of clean milk, which is comparatively easy, would be a natural result.

If the farmers in the country are to do their share in the prevention of infectious animal diseases then it is as necessary for them to have a working knowledge of the regulations dealing with the notifiable diseases as it is for the veterinarian, and not merely to know that such a thing may or may not be done, but the reason for any prescribed course of action. Once a man of ordinary intelligence understands why a thing has to be done his co-operation will come much more readily.

Good stock farming surely also implies that the farmer will seek proper professional advice at an early stage when his animals become ill, giving to them the same consideration that he would to his own family, apart from the fact that he will save money by so doing. It is now some years since I was engaged in general practice but I am told by my practitioner friends that a large proportion of the financial loss from disease in stock is due to delay in calling in professional aid, as it always has been. I suppose an innate trait in the character of most of us is that we like to get something for nothing, or to think that we are going to do so. Perhaps this explains the existence of the pathetic columns which deal with diagnosis and treatment of diseases in certain agricultural papers and the replies by the gentleman who signs himself as "The Vet." I often wonder how much loss is caused by this diagnosis and treatment in correspondence columns; it and the purchase of crates of cure-alls must be responsible for a lot of trouble one way and another. And since the successful practice of animal husbandry can only be assured by the application of at least a modicum of common sense, the postal diagnosis of disease and its indiscriminate treatment by a solution of acetate of ammonia are scarcely compatible with good farming.

I am sure you will agree with my suggestion that a good farmer only visits markets when it is really necessary for him to do so. I happen to be a member of a committee in Scotland which is enquiring into the diseases of pigs and the possible steps which might be taken to lessen them; early in the proceedings I expressed the view that the first thing to be done was to prohibit the existence of the store pig market. The store pig market is the curse of the pig industry. I think this will be admitted by any member of our profession who has had much to do with pigs, but the evidence submitted by the Chief Veterinary Officer of the Ministry of Agriculture in his annual report of 1935, when discussing the incidence of swine fever, should remove any doubt. He says: "The history of the affected swine was traced by the inspectors of the Ministry in 1,815 outbreaks, or 88·6 per cent. of the total. These enquiries showed that 415 outbreaks (20·2 per cent.) were due directly to market infection and to infection during conveyance to or from markets, and that in 615 other outbreaks (30·0 per cent.) the affected swine had recently passed through a market and may thus have become affected." Clearly, therefore, it is not good pig farming to patronise markets.

The Scandinavians have taught us how to breed bacon pigs, how to feed them and house them and also how to make them into bacon. But they have not yet taught us to abolish the store pig market. They abolished theirs long ago. They found—as in fact we also have—that a thriving industry and a store pig market are incompatible.

And talking of markets leads to the thought of the other market conditions inimical to good farming. One of these is the market trade in very young calves and the other the trade in Irish store cattle. It is not unusual to hear farmers say that it should be illegal to expose for sale in a market any calf under ten days old. With this I agree, but would extend the period to fourteen days. As regards the Irish store cattle, it is commonplace knowledge that the beasts which do best are those that are bought on commission from an Irish dealer and which do not pass through markets either in Ireland or here. The shorter the route from farm to farm the better the animals thrive.

It is, of course, not possible in a paper of reasonable length to refer to all the things which might be done or left undone having an influence on the incidence of disease amongst farm animals. I think, however, it might be profitable to discuss a group of four diseases which I think we shall all agree includes the most serious scourges of our dairy and breeding herds. I refer, of course, to tuberculosis, abortion, mastitis and Johne's disease. I would group these together not only because they are the most important but because to a considerable degree measures adopted to control one are common to them all. A farmer who, gifted with higher ideals than his neighbour, of what constitutes good farming, and who has eradicated tuberculosis from his herd has only done so after the expenditure of much labour, thought and money, and the period during which

the eradication has been in progress has been one of considerable anxiety. Having established his clean herd he has not only increased its cash value but he has produced something of which he may be justly proud. It is, therefore, extremely disheartening to the farmer when he finds that one of the other diseases which have been mentioned, has made its appearance and has spread through his herd almost before he is aware of its presence. Have we not all seen this happen time and again with these diseases? Good farming implies a determined effort to keep a herd free from these diseases. Is it possible for the farmer and the veterinarian to do more than is being done at present? I have no doubt in my own mind that much more could be done but not, I think, under the present method of utilising the veterinary services.

Any serious attempt to control these diseases necessarily implies the utilisation of laboratory diagnostic measures. For instance, frequent agglutination testing for *Brucella abortus* infection will supply the veterinary practitioner and his client with information which will enable them to adopt some measures of control, such as segregation methods where the premises and general conditions are sufficiently encouraging. Quarterly bacteriological examination of the milk of every cow in the herd is undoubtedly of value in detecting latent cases of mastitis and is sometimes—though not always—the means of preventing a disastrous outbreak of acute disease. Johne's disease, which many veterinarians consider to be a more serious menace to the well-being of the cattle herds in this country than any of the other three diseases mentioned, must be fought more vigorously than we are doing at present, and here again laboratory assistance would be essential for the expectation of any degree of success to be fulfilled. Now, it is probable that such laboratory diagnostic work would involve the stock owner in a cash expenditure, possibly greater than he could afford and which might not result in his obtaining an immediate or very obvious commensurate financial return. That bovine tuberculosis exists to the extent that it now does is not altogether the fault of the farmer; and the veterinarian is certainly not to blame, for have we not time and again appealed for more definite action to be taken to reduce the incidence of this eradicable disease? The farmer, therefore, is surely entitled to more financial aid to encourage him to clean his herds. I think he would be greatly encouraged to proceed with his difficult task if he were to be granted free laboratory assistance, through his practitioner, to help him in combating abortion and mastitis.

Lord Lymington in an address on "The Place of Agriculture in Home Defence," given to the members of the Farmers' Club recently, made this statement: "Any policy of subsidy or protection should aim at good farming, not easy profits. Good farming is not made by Marketing Boards and restricted production." As any well-considered scheme of national defence must include measures to increase the numbers of our food-producing animals, reduction of losses from disease would necessarily be a natural concomitant. To subsidise the farmers for this purpose would, therefore, surely be justifiable.

Veterinary practice differs from medical practice in two fundamentals. The medical practitioner seldom has to assume sole responsibility for the diagnosis of his cases. He does not have to consider the cash value of his patients, consequently consultative practice is now more the rule than the exception. But it is only under unusual circumstances or where the cash value warrants additional expense, that the veterinary practitioner can feel justified in seeking a second opinion. The other fundamental difference is the laboratory diagnostic service. Medical practitioners have such a service to which they can apply, as for instance in the hospitals, which must be of almost incalculable value not only for the certain diagnosis of their cases but for the rapid clearing up of any doubt which must from time to time exist in the minds of all conscientious practitioners.

On the other hand, veterinary practitioners do not have such an organised service except in connection with the few notifiable diseases. It is, of course, true that the staffs in the laboratories in veterinary colleges, research institutes and agricultural colleges are willing to give assistance in diagnosis when asked to do so, and it is known that a great deal of work of this nature is done, but in my opinion these services should be so extended that the general practitioner could feel free to apply to a veterinary laboratory for assistance whenever he feels the need of it.

There is one branch of stock farming that is causing the people engaged in it a great deal of anxiety, which we in the veterinary profession ought to do something more to remove. I refer to the losses caused from disease in the pig industry. I am afraid, however anxious we may be to congratulate ourselves on achievements past and present, we can scarcely say that we have been of very great assistance to the owners of pigs in the past, nor are we at present. The pig industry, rightly encouraged by the Government, has increased its commitments. You may perhaps realise the importance of this to the State when I tell you that the pig population in the country has increased from 2,453,510 in 1930 to over 4,000,000 at the present time, and it is generally admitted that the quality of the pigs sent to the bacon curers has improved very considerably. The industry is, however, very concerned about the wastage due to disease—

using this term in its widest sense. This is indicated, for example, by the formation a little while ago by the National Farmers' Union in Scotland, of a committee to enquire into the causes of the wastage and to consider what might be done to reduce it. The National Pig Breeders' Association is also giving much thought to this matter and is co-operating with the Agricultural Research Council and the Ministry of Agriculture in their endeavour to obtain information about the incidence of disease. Wherever men who have an interest in pigs are gathered together the question of the losses due to disease crops up, as it did repeatedly during the discussion of a paper on Pig Husbandry which was read at the Farmers' Club early in December. The pig industry, an industry of great importance to the State, is undoubtedly doing a great deal to stabilise its position but feels that its progress is hampered by disease and, I have heard it said, by the lack of support from the veterinary profession. I wonder to what extent you agree that this lack of confidence in the profession, for it amounts to that, is justified. It has been freely stated that the average veterinary surgeon is not interested in the troubles of pig owners and that even if he were, his knowledge of porcine diseases is not profound. Without either admitting or attempting to refute these allegations of incompetence or indifference I think that in view of the unrest—indeed, one may I think say, dissatisfaction—that exists in the industry, it might be wise (or perhaps on my part unwise, I do not know) to review the position as far as it concerns us.

One thing, however, is beyond dispute, that the margin between profit and loss in pig farming is so narrow that losses due to malnutrition, bad housing and disease—whether of a specific or non-specific nature—must be reduced if the industry is to be established on a firm profit-ensuring basis in this country. Pig farming as at present carried on is not good farming, and, frankly, I can see no hope for improvement unless we give the matter our earnest consideration, and devise a method whereby the pig owner can get adequate professional advice.

According to the annual report of the Chief Veterinary Officer of the Ministry of Agriculture for 1935 there were 15,541 outbreaks of disease among pigs which were reported as being suspicious of swine fever. Of this number 2,049, or only 13·2 per cent., were diagnosed as swine fever. It may be, and doubtless is, a cause of satisfaction to the official mind responsible for the control of swine fever, that so many pig owners err on the safe side; thus the greater the number of outbreaks of illness among pigs reported to the Ministry the less the likelihood of swine fever remaining undetected in its early stages and the less the likelihood of the owner being prosecuted. This condition of affairs may, therefore, be very satisfactory for the reasons stated, but to me the fact that only 13·2 per cent. of the reported cases were found to be swine fever is the most disturbing feature in the Chief Veterinary Officer's report.

The questions that one naturally asks oneself are, what was the cause of the illness in the remaining 87 per cent. of cases, or 13,492 outbreaks, and also, what other steps, if any, were taken and by whom, to ascertain the cause of the illness and to advise the owner what to do? It is true that of 13,492 outbreaks of disease among pigs which were not due to swine fever 2,348 were returned by the Ministry as due to swine erysipelas and the owner notified so that he could consult a practitioner. It is, of course, also true that there are many practitioners who give valuable service to the industry but, on the other hand, many pig owners never consult a practitioner, except possibly in cases of dire necessity. It must be realised that the veterinary inspector of the Ministry has no authority —no right—to take the place of a practitioner when dealing with a suspected outbreak of swine fever. I have dealt with this aspect of good farming—or rather lack of it—at some length because I am sure it is where the profession gives the State the poorest service and because I am convinced not only that better service should be given but that better service could be given. The service was not satisfactory in 1930 when there were two-and-a-half million pigs in the country; it is no better now when there are over four million. One is reminded in this connection of the sudden increase in the poultry industry which took place in the post-War years; veterinary aid was not satisfactory then but organisation has now produced an efficient and, I believe, an adequate diagnostic and advisory service. To some extent the magnitude of this work may be judged by the fact that in the Poultry Department of the Edinburgh College during 1936, 1,356 *post-mortem* examinations were made; 21,080 doses of fowl-pox vaccine issued and 121,622 agglutination tests made for bacillary white diarrhoea, and this was the work of only one Institute assisting the practitioner and the poultry farmer to carry on good poultry farming.

All of you, I am sure, will agree with my remark that successful animal husbandry depends upon good co-operation between farmer and veterinarian. For this to exist there must be close co-operation between the various divisions in our profession. By this I mean that the officials of the Ministry of Agriculture, of counties and municipalities, and the general practitioners ought not to be regarded as separate units; it is true that co-operative work between them does exist to a certain extent

and that, on the whole, there is mutual respect and goodwill. But I think that when considering veterinary service to the State—which is the primary reason for our existence—we should keep two facts clearly before us; one of these is the magnitude numerically of the animals in our charge and their economic importance and the other the small size of the veterinary profession. Now to increase the profession numerically, to any appreciable extent, would be to endanger its efficiency if not its actual existence because as a profession it would become unattractive financially. But to increase its general efficiency by co-ordinating the work of the divisions—the various official bodies and the practitioners—would surely assist in good farming, be beneficial to all and harmful to none. But the success of any such co-ordinating movement would depend upon the principles underlying the action and on the goodwill of the profession. The scheme should be designed and promulgated by the profession. You are, of course, all aware of the talk that there has been of the proposed formation of a State Veterinary Service and you are doubtless all familiar with the suggestions made in the report of the Reorganisation Commission for Milk and in the report of the Economic Advisory Council Committee on Cattle Diseases (the Hopkins Report). The suggestions to which I refer are those recommending a substantial increase in the whole-time veterinary inspectorate, this increase being based upon certain numerical *per capita* clinical examinations of dairy cattle. Without in any way belittling the good services rendered by our whole-time veterinary officials—whose chief value to the State has been the education of the dairy farmer rather than the actual prevention of tuberculosis—I think you will agree that the mere clinical examination of dairy cattle, unless it is a prelude to a more progressive scheme, is of limited practical utility. But there is a more important objection to an unrestricted increase of the whole-time officials which has, of course, been fully recognised and discussed by the profession, and that is the certain reduction in the number of general practitioners and the consequent increase in the number of unqualified "practitioners" which would follow.

I am not quite sure, however, that the real danger of an unrestricted increase in the whole-time inspectorate has been realised either by the important people outside our ranks or by ourselves. I doubt if it is fully appreciated that the formation of an efficient veterinary health service—or State service—or whatever you like to call it—is a different and more difficult matter than the formation of a medical health service.

A young medical graduate would naturally start his career with some knowledge of his fellow men; the veterinary graduate unless he comes of veterinary or farming stock has to learn, as it were, a new language—a language which at the best can only be taught in part at college but which is acquired by experience in the field. If, therefore, the whole-time inspectorate is increased at the expense of the number of experienced clinicians—and remember there are certainly not more than 2,200 general practitioners in the whole of England, Wales, Scotland and Northern Ireland—how will the young recruits to the inspectorate get the necessary training which will make them really capable officials?

It is possible to make a good State service veterinarian from a good practitioner but it is certainly not possible to make one from a veterinarian with little clinical experience and perhaps not much knowledge of practical animal husbandry and the ways of farmers. It is because of this that I have always, since its inception, held the view that before a graduate begins to study for the D.V.S.M. he should have served at least one year as a general practitioner. But there are, of course, two sides to this question.

I said a little while ago that a scheme for a co-ordinated veterinary service should be designed by the veterinary profession itself. You are doubtless aware that such a scheme has been proposed by our National Society under the chairmanship of that much-respected member of our profession Mr. Nairn. I think that the profession should study the scheme well, complete it, and if satisfied that it would be beneficial to the State, promulgate it.

As good animal husbandry cannot be carried on without good veterinarians and as a veterinarian to be good must have a sound training in professional fundamentals, the veterinary colleges carry a heavy responsibility.

Those of you who have read the report of the committee on Cattle Diseases of the Economic Advisory Council must have sensed that the signatories to the report would like to see a better type of student entering the colleges. Thus cl. 184: "We do not doubt that students of a good type will offer themselves in adequate numbers for veterinary training once it is fully realised that, on the expansion of the veterinary service, an attractive career will be open to those joining the service." And again, in the addendum attached to the reservation by Sir Merrik Burrell, "In time it should be made obligatory for a man to hold the Diploma in Veterinary State Medicine before he could join the State Service. The best men would be required and attracted for they would have a definite, responsible and assured future and pension. *This in its turn would attract a higher standard of recruits to the veterinary profession.*"*

*Italicised by the speaker.

Since the student of to-day is the practitioner of to-morrow and will be responsible for putting into effect any scheme which may be evolved for the improvement of the veterinary services and consequently a higher standard of animal husbandry, let us consider whether he falls short of the desired "standard"—whatever that might be. But in considering the student I hope I shall not fall into the common error of judging the world by what can be seen from one's own attic window. I can only speak of the students associated with one college. The others, of course, may be greatly superior, slightly worse or much about the same—I do not know. To begin with, the number now attending all the colleges is probably sufficient to meet the demand in the near future. But who sets the standards and how are they set? Is it the social, moral or intellectual standard by which these men are to be judged?

We now have 360 students—a far greater number than in former years and probably, therefore, a greater variety. Of their social and moral status it might justifiably be considered an impertinence for me to speak, but one may perhaps—without giving offence—say that we have men from exalted and humble walks of life and it has never yet been shown that those from the less exalted are less moral or less intellectual than the others. The intellectual standard may perhaps be assessed on pre-college scholastic attainments. But I am not so sure of this. The relevant facts, however, are that of the 360 students at present with us, 113, or approximately 31 per cent., are actually taking the Edinburgh University courses for the B.Sc. in Veterinary Science, and that—for the most part—concurrently with the course of instruction for the M.R.C.V.S., and there are others, quite an appreciable number, who have the necessary educational qualifications to permit of university matriculation. There are some who already possess a university degree when entering the college; but please observe I am *not* saying that the students who have not passed a pre-entrance examination acceptable to a university are necessarily of lower intellect than those who have. To imply such a thing would be quite wrong. Nevertheless I feel sure that we shall all agree with the recent decision of the R.C.V.S. that from the beginning of the session 1938-1939 all students registered as such in a veterinary college must hold certificates of university matriculation standard. May we not, therefore, assume that the intellectual standard of the student of the near future—if not indeed of the present—will meet the requirements of the State?

I can, moreover, say this—I am certain that the graduate of to-day *knows* far more than his fellow of 30 years ago. He is better taught, his ground work in the basal sciences is infinitely more solid and the advances in the teaching of some particular subjects have been so great that to compare the present with the past would be ridiculous. To this, of course, you may reply that the recent graduate is not as good a clinician. Well, that may be true: it was said of us in 1908 when I left college: it always will be said. But if you are going to say it now I warn you that I shall ask you to define the qualities of a good clinician and then to point out just where the present young graduate falls short of your ideal.

The Veterinary Record

March 6th, 1937.

The Clinical Diagnosis of Bovine Tuberculosis

TUBERCULOSIS, perhaps more than any other disease of the domesticated animals, manifests itself in many different ways, depending on the mode of infection and the spread of the diseased processes in the body.* In some cases the symptoms may be such as to lead to a correct diagnosis by means of the ordinary clinical methods in the hands of the up-to-date veterinarian. Yet, on the other hand, the course of the disease may be less straightforward and produce only indefinite symptoms as those of meningitis, inco-ordination, obscure lameness, kidney disease, sterility and so on.

It follows, therefore, that the diagnosis must be attacked from many different angles and any new aid to diagnosis is greatly to be welcomed by those concerned in the clinical examination of cattle. This applies particularly to methods which can be carried out by the field worker with a minimum expenditure of time and no more elaborate apparatus than a good microscope, a centrifuge, some suitable stains and the usual simple laboratory equipment. A field diagnosis, which is possible in the majority of "open" cases, not only saves the expense of a laboratory diagnosis, but what is really more important, the delay necessary for the latter. More abstruse bacteriological methods, which can only be carried out in a fully-equipped laboratory, can, on account of their greater accuracy, be used to supplement and check clinical findings, but it must be borne in mind that clinical diagnosis must essentially be the first line of attack. The true use of a laboratory must always be to assist and augment the scope of the clinician, and to

elucidate those cases in which clinical methods fail.

In recent years there has been a distinct advance in the methods employed in clinical diagnosis, the most important of which are the strides made in the accuracy with which the microscopical examination of milk samples can be carried out. This has been made possible by the attention now focused on the cell content of the sediment of such samples.

In this issue of the *Veterinary Record* we publish a critical summary, by Dr. Geoffrey B. Brook, of the Ostertag method in control and eradication of tuberculosis as practised in certain continental countries. The author, who was the holder of the Dr. Dorothy Temple Cross Fellowship of the Medical Research Council, has recently returned from studying these methods at first hand abroad. Those who are acquainted with Dr. Brook's writings in the past will not be surprised that we recommend our readers to study carefully this article. This more particularly applies to those veterinarians who are especially employed in the clinical examination of dairy cattle in this country. The author describes the various systems employed in the detection of animals actively disseminating tuberculosis and figures are given indicating the accuracy of the various methods. It must be left to our readers to decide which, if any, of these would be applicable in this country and how far the British farmer would agree to their routine employment along with the apparatus described.

The special appliances required are shown in the illustrations and with the aid of these the writer describes how the field worker should be able in many cases to arrive at a definite diagnosis of tuberculosis involving the lungs and the uterus. Any methods whereby the cow actively excreting virulent living tubercle bacilli can be removed more quickly from the herd must be welcomed, but we agree with Dr. Brook when he states that he is of opinion that it is probably unnecessary, if not impracticable, to substitute the Ostertag system for the present English method of examining cattle.

The methods described are largely dependent on laboratory assistance and we are at once struck with our lamentably small number of veterinary laboratories in this country compared with the countries visited. For some years we have been emphasising this lack of veterinary laboratories and we could well take a lesson from our continental friends in this respect.

Compared with the results of clinical examination of cattle in this country, the apparent unimportance attached to the detection of tuberculosis of the udder by the Ostertag method, compared with the importance given to the finding of tubercle bacilli in the sputum stands out in marked contrast. Dr. Brook also calls attention to the findings of Marcusson and Plum, who record more incorrect diagnoses following a biological or a cultural positive than following a direct microscopic finding. With this result many workers in this country will agree and at the present time when certain laboratories are considering the advisability of substituting the direct culture method of ascertaining the presence of tubercle bacilli in individual milk samples for the biological test, which has so many disadvantages, the statement is illuminating.

While the Ostertag method may be of some value in eliminating tuberculosis from self-contained herds it would, in our opinion, be entirely misplaced when applied to "flying herds" which make up such a large proportion of the milking herds in England. We cannot help feeling that if the aim of the method is to eliminate a high proportion of the cattle that are spreading tuberculosis from some open lesion or lesions, a much more accurate and in the long run much cheaper method would be the use of the tuberculin test. This test is now so much more reliable than when Ostertag first elaborated his method that it seems difficult to justify the latter, at least without the use of tuberculin to separate the reactors from the clean cattle in the first instance. Any cow which reacts to the test may at any time become an active and dangerous animal—when, no man can say—and to go to such great care and expense in utilising clinical methods along with so much bacteriological assistance as the Ostertag method necessitates, and not make use of the tuberculin test, seems to us irrational. It must be borne in mind that the British method of clinical examination of dairy cattle has not been instituted to eradicate tuberculosis but to keep down the tuberculous infection of the milk supply to the lowest possible figure, whereas the Ostertag measures are primarily aimed at eradication of the disease.

To carry out the examination of cattle by the methods described would require such staffs and amount to such a cost that no Government or local authority would be likely to countenance it. If we are to advance further it must be along the lines of tuberculosis-free herds

brought about by the judicious use of the tuberculin test combined, possibly in the future, with some method of immunisation against tuberculosis. Nevertheless, even if these methods do not appear to be suitable for general use in this country, it is to be hoped that some of our readers will try them out and publish their results for the benefit of their colleagues.

* * * * *

Royal (Dick) Veterinary College Extension Fund Appeal

IN another part of this issue we publish a letter from Dr. O. Charnock Bradley, the Principal of the Royal (Dick) Veterinary College. Most of our readers will already be aware that the Edinburgh College has launched an appeal for funds to provide for much needed extension of the teaching and research facilities of the College. We can think of no more worthy object to commend to the general body of the profession than this Appeal.

The building of the present fabric of the Royal (Dick) Veterinary College was completed only some 20 years ago, and was then regarded as likely to be adequate for some considerable time to come. Before the removal from the old Clyde Street site took place in 1916, the College had been carried on without drastic change or extension in its structure for over 50 years. Minor additions and alterations had certainly been made, but nothing approaching the magnitude of the present proposals had been needed; indeed, the area of the extensions for which money is now required appears to be almost as large as the area occupied by the entire Clyde Street buildings.

It might well be relevant to ask what factors have brought about the needs for this sudden expansion. It would be erroneous probably to ascribe them solely to the increasing importance of veterinary science in Great Britain.

To the various members of the staff, ably led and directed by Principal Bradley for more than 25 years, must be given much credit for having so extended the spheres of influence of the Royal (Dick) Veterinary College that it has outgrown the confines of its present buildings and must expand.

It has been said that the teaching institutions are the nurseries of a profession, and that the strength of these is the mainstay of future security. When one of the Colleges of the profession calls for help, the rank and file must not turn a deaf ear; so much the more when a man's *Alma Mater* seeks the means to extend, he must not neglect to do what he can to provide these means. The *alumni* of the "Dick" College have in the past nobly responded to such calls as have been made upon them, and their many friends, both within and without the veterinary profession, have likewise contributed their quota. We have no doubt they will respond once again with an even greater degree of enthusiasm.

The present Appeal is something which may very well be regarded as a form of investment—an investment which will yield in interest an assurance that the northern roots of the profession are adequately nourished. It is an investment which should commend itself to all our members. The sum of £20,000 is needed. If each member of the N.V.M.A. made it his duty to subscribe even a guinea, the result would yield practically one-tenth of the required amount, and if each graduate of the College would guarantee twice that amount (or more) we have no doubt that it would go a long way towards assuring the success of the Appeal, and result in the personal satisfaction of knowing that some little return has been made for those privileges which each of us enjoys. We heartily commend Principal Bradley's Appeal to the sympathetic consideration of all our readers.

ARTIFICIAL THALLIUM MOULT IN SHEEP

Nature, in a note appearing on January 16th, comments that it has been known in medicine since 1898 that thallium compounds taken internally will cause loss of the hair, and continues: "This method has recently been used to produce moulting of the fleece in sheep, instead of shearing. Professor N. A. Iljin (*J. Genet.* 33. No. 2) gives a short account of experiments in which the sheep's fleece becomes loose a few days after treatment and can be removed whole with the hands in a few minutes. Sheep with coarse and mixed wool have a natural annual moult which is absent from fine-woolled breeds such as the merino. Hybrids are found to exhibit segregation of this character of natural moulting. By thallium treatment, the moult may be induced in merinos and their naturally non-moulting hybrids. Extensive experiments with this method have been carried out on Soviet State Farms in the Crimea, Ukraine, Caucasus and the Moscow district, but as a considerable number of sheep were killed by an overdose during the experiments, it is evident that the effects of repeated doses on the animal will need to be known before the treatment can come into practical use."

CLINICAL COMMUNICATIONS

Nembutal Anaesthesia in a Young Pig

S. A. E. GACHET, M.R.C.V.S.
Banwell, Somerset

Subject.—Eight-weeks-old Large White gilt; weight 31 lb.

History.—Irreducible umbilical hernia with adhesions; contents bowel and omentum. During the fortnight previous to operating it became very much larger and skilled aid was called in.

Treatment.—The gilt was fasted for 24 hours and it was thought worth while to try nembutal because of its ease of administration.

As no data were available as to dosage it was decided to give the same amount as for a dog of a similar weight, *i.e.*, one-fifth of a grain per lb. body weight. This was given *per os*—four 1½ gr. capsules, which proved remarkably easy to administer, and were followed by four tablespoonfuls of water to ensure rapid dissolving of capsules and contents.

The onset of locomotor ataxia occurred in ten minutes, reaching a maximum in 14 minutes (paddling lasting three minutes), loss of corneal reflex in 16 minutes, relaxation of the jaw in 18 minutes, complete muscular relaxation and stertorous breathing in 20 minutes.

The operation followed on the usual lines.

The depth of narcosis was maintained for one-and-three-quarter hours and consciousness fully returned by the fifth hour.

Outcome.—Fourteen hours after the operation the animal was given small amounts of milk and gruel and so on for two days. On the third day it was turned out with its fellows and made an uneventful recovery.

It seems that nembutal would be easily administered to pigs by means of the usual wooden gag and there is no difficulty in estimating the weight of the larger ones as most pig farms have weighing machines.

* * * * *

Coccidiosis in a Dog

S. F. J. HODGMAN, M.R.C.V.S.
Shortlands, Kent

I was asked to attend a red setter dog, aged about two years, suffering from diarrhoea.

My first visit was about two months ago. The dog was reported to be eating well, and on examination I found the dog very cheerful, with normal temperature and in good coat, but on the thin side.

Since that day I have attended the dog three times for the same trouble. It has usually responded to treatment within a few days, but has been progressively losing weight. I was puzzled to account for this. Urine was tested, and the dog was also tested for tuberculosis, both tests proving negative.

A week ago I was called in urgently and found the dog with a temperature of 104°, severe dyspnoea, congestion of the lungs, a cough, and watery diarrhoea. That evening, while reading an article in a veterinary paper, I was reminded that the general appearance of the dog was similar in many respects to that of a rabbit suffering from coccidiosis infestation. I was so impressed by this idea that the next morning I 'phoned the owner to obtain for me a specimen of the dog's faeces. This I took to Major Dalling, telling him of my suspicions, and he very kindly examined it for me. The coccidia were very evident. That evening the dog collapsed and was destroyed to save it further suffering.

ARE VIRUSES ORGANISMS OR AUTOCATALYSTS?

Professor Henry H. Dixon of the School of Botany, Trinity College, Dublin, writing to *Nature* (January 23rd, 1937), gives the following reasons for his opinion that viruses are more properly regarded as autocatalytic substances than as specific organisms, stating that from 1922 on he has mentioned the idea in his lectures: (1) The absence of a limiting surface between the material of a virus and its host; (2) the high speed of the transmission of its characteristic symptoms (10 to 30 c.m. per hour) in the tissues of the host; (3) its rapid increase; (4) the vanishingly small quantities needed for inoculation.

Professor Dixon states that this view is now strikingly supported by Stanley's separation from a virus-infected plant of a crystallisable protein, which, when inoculated into a healthy one, produces the symptoms of the virus disease.* From the work of Bawden, Pirie, Bernal and Fankuchen,† it further appears that the molecules of this protein are rod-shaped and are built up of sub-units of the same character.

The facts recently emphasised in Dr. John Caldwell's article,‡ namely, that viruses spread most rapidly from growing tissues, where presumably the sub-units of the protoplasmic proteins are in great abundance, and that they travel from cell to cell by way of the plasmodesmata, accord well with the autocatalytic theory. Furthermore, they cannot penetrate through a barrier of dead cells, or through unperforated cell-walls.

No doubt the present workers will test, or have already experimentally tested, the ability of Stanley's protein to catalyse its own production in the extracts from otherwise uninfected cells. It must be remembered that Olitsky has already reported that he has been able to cultivate tobacco mosaic in a simple medium presumably free from cells.§

Phytopathology. 26. 305. (1936.)
†*Nature. 138.* 1051. (December 19th, 1936.)
‡*Nature. 138.* 1065. (December 19th, 1936.)
§*Science. 60.* 593. (1924.)

ABSTRACTS

[Paratuberculosis (Johne's Disease) of Cattle. Dunkin, G. W. (1936.) *Proc. Roy. Soc. Med.* **30.** 83.]

This is a review of the present-day knowledge of Johne's disease, special emphasis being laid upon the subject of diagnosis. The economic importance of this disease in Europe is stressed and it is further stated that the infection is slowly but surely spreading among American cattle. Occasional cases have also been reported from New Zealand, Australia and South Africa.

Following upon the first isolation of the acid-fast Johne's bacillus research was delayed, partly because the economic importance of the condition had not been fully realised and partly on account of technical difficulties which even to-day have only partly been overcome. In the first place it has not proved possible to infect small laboratory animals and in consequence animal experiments have been confined to bovines, which has rendered extensive research quite impractical. Very recently the author has succeeded in infecting goats artificially, a fact which offers possibilities for further research. Another obstacle to the study of Johne's disease has been the difficulty of cultivating the organism in the laboratory. It was first grown on a medium containing extracts of tubercle bacilli and practically all more recent cultural modifications involve the use of some "essential extract" of acid-fast bacteria. It has proved possible by prolonged and tedious manoevring to train certain strains of Johne's bacillus to synthesise this "essential extract" for themselves, but such procedures are only suitable for special purposes such as training a strain for use in the preparation of johnin.

Whilst the diagnosis of clinical cases of Johne's disease is a comparatively simple matter, the identification of early cases of infection is extremely difficult. *Post-mortem* identification may be based upon the oedematous and haemorrhagic appearance of the ileo-caecal valve of the intestine, but microscopical or cultural confirmation of the diagnosis must be obtained. Microscopical confirmation in early cases is rarely effective, whilst cultural examination involves cultivation from the intestinal mucosa, mesenteric, pharyngeal or even other lymphatic glands. Growth takes many weeks to appear and the absence of growth offers no certainty that Johne's bacilli were not really present.

An aspect of greater importance from the point of view of preventive medicine is the diagnosis of this disease during life. Much work has been done to render the allergic (johnin) test more reliable and many improvements have been devised for the preparation of the johnin. These improvements have been aimed at the exclusion of extracts of acid-fast bacteria from the medium because such extracts tend to be the cause of non-specific allergic reactions. The interpretation of the test sometimes offers serious difficulties on account of indefinite reactions or because of cross-sensitisation resulting from infection with avian or bovine types of tubercle bacilli. The test is, however, the best method of diagnosis which is at present available. Serological tests, in particular the complement fixation test, may give useful confirmatory evidence but they do not replace the allergic test. As before, cross reactions may result from the preparation of antigen on medium containing extracts of acid-fast bacilli.

Prevention and eradication of the disease is handicapped by the absence of adequate means of diagnosing infection in the early stages. Vaccination has proved useless and control is dependent upon the removal of infected animals and the disinfection of contaminated areas. The fact that the incubation period may be months or even years complicates the problem enormously. The best way of treating infected pastures is by heavy applications of fresh quicklime (two tons per acre) applied during hot dry weather.

The author also made brief mention of Johne's disease in sheep. Whilst admitting that sheep suffer from a similar disease to cattle caused by an acid-fast organism like Johne's bacillus, he questioned whether the causal organism was identical in both cases. The difficulty of cultivating the organism from sheep and the long period of incubation required suggests an essential difference in identity.

E. J. P.

* * * * *

[The Ætiology of Bovine Actinomycosis. Sedlmeier, H. (1936.) *Zschr. Infektkr. Haust.* **50.** 23. 129-164.]

The article contains a valuable review of the literature concerning the aetiology of actinomycotic lesions in cattle. It will be remembered that there has been considerable confusion over the aetiology of this clinical condition. The first confusion arose from the identification of two different members of the genus *Actinomyces* as the cause of actinomycosis, the one being an anaerobe and the other an aerobe. Later it was satisfactorily concluded that *Act. bovis* (Wolff and Israel), the anaerobe, was pathogenic, whereas the aerobe now known as *Act. graminis* was a saprophyte having little or no pathogenic significance. The subject was once again confused by the discovery that in bovines, actinomycotic lesions may be caused by two entirely different organisms, *viz.*, *Act. bovis*, a Gram-positive anaerobe, and *Actinobacillus lignieresi*, a Gram-negative aerobe. It

was learnt that lesions in bony tissues were always produced by *Act. bovis* and those in soft tissues such as lymphatic glands on the tongue were due to the actinobacillus. It should also be remembered that the so-called actinomycosis of the udder is generally due to a staphylococcal infection.

The work of the present author has confirmed the foregoing findings, for he has isolated *Act. bovis* from 21 cases of actinomycosis of the jawbone and never from lesions in soft tissues, whereas he has found the actinobacillus in 27 cases of lesions in soft tissues, but never in affected bone. E. J. P.

* * * * *

[**A Study of some Acid-fast Actinomycetes from Soil, with special reference to Pathogenicity for Animals.** Gordon, R. E., and Hagan, W. A. (1936.) *J. Infect. Dis.* **59.** 2. pp. 200-206.]

The authors isolated eight strains of acid-fast actinomycetes from a series of thirty soil samples, showing that these micro-organisms are not rare in soil. Their cultural characters were compared with those of actinomycetes isolated from lesions in man and animals, and no distinctive features were found. One of the strains was highly virulent for rabbits soon after isolation, and produced a disease similar to that produced by "pathogenic" types. The "soil" types, however, possessed little or no pathogenicity for guinea-pigs, whereas the "pathogenic" types produced fatal infections. W. L. S.

* * * * *

[**The Resistance of Salmonella pullorum to the Action of various Disinfectants.** McCulloch, E. C., and Costigan, S. (1936.) *J. Amer. Vet. Med. Ass.* (1936.) **89.** 1. pp. 53-58.]

In order to compare the germicidal value of various disinfectants on *Salmonella pullorum* under natural conditions, the authors used the organism in suspension alone and also along with suspensions of chicken manure at temperatures of 2°, 20° and 40° C. They conclude that official phenol coefficients may give little information as to the comparative value of these agents used on the disinfection of poultry houses and give a table of recommended dilutions of various disinfectants for this purpose. D. W. M.

* * * * *

[**Enteritis in Lambs from Over-feeding.** Carré, H. (1936.) *Rec. Méd. vét.* **112.** 6. pp. 321-333.]

Lambs undergoing rapid fattening are particularly liable to die from acute enteritis. Most cases occur at three to four months, but occasionally up to seven months. On *post-mortem* there is a large mass of food in the rumen and abomasum, and frequently the pylorus is closed by a plug of matted grass or wool. The intestines are practically empty, but dilated with gas, and the mesenteric glands are much enlarged and red in colour. The kidneys are often pulpy, or dotted with petechial haemorrhages, as also are the myocardium and diaphragm. The authors believe that the trouble is cumulative, weeks of indigestion leading to atony of the intestines and blocking of the pylorus; this allows of the rapid development of *B. perfringens* and death occurs from toxaemia. The authors have found that irregular-shaped mucus-coated faeces are a constant and useful diagnostic feature at the onset of the trouble. If at this stage the lambs are allowed only their mothers' milk, all other foods, particularly linseed cake or beet pulp being withdrawn, then recovery is rapid. W. L. S.

* * * * *

[**Sudan Grass and other Cyanophoric Plants as Animal Intoxicants.** Rogers, C. F., and Boyd, W. L. (1936.) *J. Amer. Vet. Med. Ass.* **88.** 4. 489-499.]

Experimental feeding during the years 1932-33-34 and 35 of forage plants belonging to the genus *Sorghum* and Sudan grass, which are known to contain cyanogenetic principles, failed to produce toxic symptoms in cattle and sheep which could be attributed to the effect of the combined cyanide. The bulk of the field and experimental evidence indicates that although cyanide sometimes may be a factor in the loss of animals, it is the uncommon cause even when cyanophoric plants have been fed prior to the death of the animals. The authors record several cases in which losses have occurred with symptoms similar to those of cyanide poisoning but in which cyanophoric plants were not involved. It is suggested that some other unknown principle present in the forage was the cause of death, and that deaths, even when cyanophoric plants are involved, may result from other factors than cyanide alone. N. J. S.

THE HORSE OWNER'S REFERENCE BOOK, 1937

The Horse Owners' Reference Book for 1937 has now been issued by the National Horse Association of 12, Hanover Square, London, and should prove of interest to all lovers of the horse. Contained in the 160 pages are some 600 to 700 dates of fixtures in which horses and ponies can participate, *viz.*, horse shows, races, parades, gymkhanas, sales, etc. It also gives a classified list of riding schools in all parts of the country (with those approved by the Association specially marked), railway rates, champion animals of all breeds, racing and pony statistics, etc.

The addresses of the leading agricultural and horse shows have been included, in addition to the dates of their shows this year.

According to this book, there are 39,656 horses in London, 2,050 stallions licensed for service in England and Wales, with a further 573 in Scotland, and there are 1,012,743 horses used on farms. Out of the 607 packs of hounds in the world, 446 are in Great Britain.

The Horse Owner's Reference Book is obtainable from 12, Hanover Square, London, W.1; 1s. net, 1s. 2d. post.

REVIEWS

[**Practical Animal Husbandry.** By W. C. Miller, M.R.C.V.S., F.R.S.E., and E. D. Robertson, M.R.C.V.S. Pp. 427, with 182 illustrations. Published by Messrs. Oliver & Boyd, Edinburgh and London. Second edition, price 15s. net.]

This is essentially a practical book written with the object of helping those whose work lies, or soon will lie, amongst animals. The authors have kept this end steadily in view, and so have avoided the temptation to theorise that too often overcomes writers of this type of work. While avoiding the Scylla of theory, Messrs. Miller and Robertson have also succeeded in steering clear of the Charybdis of dullness, a notable achievement.

This book is eminently readable, not only to the student but to the practitioner, and every practitioner would do well to add it to his library. The authors give lucid and accurate instructions in the care of the various domestic animals, the simplest and most effective methods of manipulation, etc. Their book also contains much useful knowledge, especially in the care of horses, and many invaluable hints that the student too often has to learn for himself in his dealings with the domestic animals.

We appreciate that in dealing with so vast a subject it is difficult to know where to end, but we should have been glad to see a little more on the breeding of dogs, their rearing, and general kennel management on a large scale. Also nothing is said on the technique for chloroforming a horse on lunging reins while still standing. As so many owners object to casting, some description of the alternative procedure would be useful.

We feel sure a third edition of so useful a book will be demanded, and perhaps the authors might consider these additions.

* * * * *

Civil Veterinary Department, Punjab

[Veterinary Bulletin No. 7 of 1936. (Stock Series.)* Livestock at the Government Cattle Farm, Hissar (Cattle—Hissar Breed). (B. N. Handa.)]

This publication is a description of the Hissar breed of cattle, with two photographs and a short account of the management and utility of the breed.

. . . . .

[Veterinary Bulletin No. 9 of 1936.* A review of the Warble-fly Pest in India and Measures for its Control, with particular reference to the Government Cattle Farm, Hissar. (B. N. Handa.)]

The pamphlet gives a short life-history of the warble-flies found in India and describes the means of dealing with the pest.

G. K. W.

*Superintendent, Government Printing, Lahore, India.

REPORT

Assam

REPORT OF THE CIVIL VETERINARY DEPARTMENT FOR THE YEAR 1935-36 (S. C. Ghose)*

The staff consisted of one Superintendent, one Veterinary Investigation Officer, four Veterinary Inspectors and 60 Veterinary Assistant Surgeons.

The year under report was not a healthy one, the incidence of mortality from contagious diseases being higher than in the preceding two.

As usual, rinderpest was responsible for more than half the total mortality among cattle. A large number of preventive inoculations was carried out by the staff and success is reported to have followed the introduction of the "goat vaccine" method against rinderpest. It is, of course, far more economical than the serum alone method.

A short course of treatment for equine surra was instituted with success. The method of treatment adopted is not stated exactly.

The Veterinary Investigation Officer was occupied in the investigation of a number of diseases, but more particularly with Johne's disease, which appears to be an increasing menace in the Province. A special committee was appointed by the Government to advise upon the action to be taken.

The number of cases treated by the itinerant staff and the number of castrations performed showed a considerable increase on the previous year, and the three Government veterinary hospitals registered an increase of attendance.

The report indicates a year of progress in several directions and the need of strengthening the veterinary staff is recognised by the Government.

G. K. W.

*[Assam Government Press, Shillong. Annas 10 or 1s.]

West Sussex County Council has decided that the scale of salaries of Assistant Veterinary Officers should be fixed at £450 with annual increments of £25 up to £600 instead of the present scale of £400 with annual increments of £25 up to £500.

N.V.M.A. DIVISIONAL REPORT

Yorkshire V.M.A.*

ANNUAL GENERAL MEETING AT LEEDS

Major Rabagliati's Presidential Address

The Annual General Meeting of the above Society was held at the Hotel Metropole, Leeds, on Friday, January 29th, 1937, at 3 p.m.

The President, Major D. S. Rabagliati, O.B.E., B.Sc., F.R.C.V.S., D.V.S.M., occupied the chair and the following members signed the attendance book: Messrs. A. H. Watson, W. A. Campbell, T. C. Hall, Lieut.-Colonel H. G. Bowes, Lieut.-Colonel J. A. Dixon, Messrs. G. E. Sampson, E. Ackroyd, G. W. Davidson, J. O. Powley, E. G. Duncan, R. S. Smythe, A. R. Withers, A. D. J. Brennan, B. Holmes, A. J. Adams, D. V. Sinclair, J. McKellar, W. T. MacGregor, W. R. McKinna, Captain J. W. Procter, Major C. Holland, Messrs. W. Halstead, A. Riggs, F. C. Scott and E. F. McCleery (Hon. Secretary). Mr. G. B. Sampson and Professor R. G. Linton were present as visitors.

The receipt was intimated of apologies for inability to attend the meeting from Dr. O. Charnock Bradley and Messrs. Tyerman, Cruickshank, Crawford and Clarkson.

The minutes of the meeting held on October 30th, 1936, having been published in the *Veterinary Record*, were taken as read and adopted.

Correspondence.—A letter was read from the Secretary of the Royal Sanitary Institute inviting the Society to appoint delegates to attend the Annual Health Congress of the Institute to be held at Birmingham from July 12th to 17th, and it was resolved that the President or his nominee should attend. It was also intimated that a Sessional Meeting of the Royal Sanitary Institute was to be held at Halifax on February 12th and 13th and that cards giving the details of that meeting, which included a discussion on "Milk and Dairies Legislation," could be obtained from the Hon. Secretary. Colonel Dixon, supported by the President, made a strong appeal to members to attend this meeting.

Free Treatment Schemes. — The Hon. Secretary reported on the attendance, on December 11th, 1936, of the President and himself at a meeting of the sub-committee of the Organising Committee, N.V.M.A., set up to consider the matter of schemes for the provision of free treatment for the sick animals of poor persons, at which the whole matter of the Leeds scheme was thoroughly discussed. The members present approved the action which had been taken.

The Hon. Secretary reported that during the year the sum of £3 2s. had been collected in the collecting box of the Victoria Veterinary Benevolent Fund and stated that that Fund had expressed their thanks through Dr. Bullock, their Secretary.

Donations.—On the proposition of Colonel Bowes, seconded by Mr. W. R. McKinna, it was unanimously agreed that a donation of three guineas be forwarded to the Victoria Veterinary Benevolent Fund and a similar donation to the National Veterinary Benevolent and Mutual Defence Society. On the proposition of Colonel Dixon, seconded by Captain J. W. Procter, it was resolved that a donation of two guineas be forwarded to the National Horse Association of Great Britain.

Election of Members.—On the proposition of Mr. A. H. Watson, seconded by Mr. E. G. Duncan, Mr. B. Holmes, of Settle, was unanimously elected a member of the Society.

R.C.V.S. Council Election.—The nomination by the Society of a representative to serve on the Council of the Royal College of Veterinary Surgeons was next considered and, after a thorough discussion of the subject, it was agreed that no nomination should be put forward at the present time. The matter of voting for candidates nominated by other Divisions was left to the individual members.

Royal Sanitary Institute Congress.—Mr. W. T. MacGregor reported on his attendance at the Congress of the Royal Sanitary Institute held at Southport during 1936. He observed that it was pleasing to see the veterinary profession so well represented.

Presidential Address

The President (Major D. S. Rabagliati) then delivered his Address from the Chair, as follows:—

My first duty is to thank you for having asked me to preside over your deliberations for yet another year and to say how much I appreciate your continued confidence. It has, however, become quite a commonplace in this Society to retain your president for two years in succession. Whether this is due to the Yorkshireman's great stability of character and dislike of change, or whether it is owing to the pious hope of the Society that the president in his second year of office will inflict only a short address upon you, I do not know! Last year you did me the honour of most kindly listening with great patience to my somewhat lengthy oration, but I can assure you that this year I intend to be brief. The first and foremost reason for this is that we are all eagerly and impatiently waiting to hear what our guest, Professor Linton, has to say to us, and secondly,

*Received for publication February 11th, 1937.

you cannot expect your president to produce two long addresses two years in succession.

I think that we can all claim that we have had a successful year, both as regards the "Yorkshire Society" and also regarding the work of our parent body, the "National." Personally, what I look upon as the most important and outstanding event of the year is that the breach in the ranks of our own profession which at one time seemed likely to rent us in twain, has to a great extent been closed, and I do not think I shall be contradicted if I say that to-day we stand much more united than we did a year or two ago. I refer, of course, to the relationship of the practitioner and the whole-time officer. Signs were not lacking even last year that a better feeling and understanding were growing up, and those hopes have most fortunately been realised, for now much more tolerance is noticeable and I look forward to the day when we will all truly respect the motto of our profession, *Vis Unita Fortior*.

About this time last year the so-called Free Services Committee of the "National" had just issued its now almost famous questionnaire, and I must admit that I, like many others, felt rather uneasy as to the results it would have. Fortunately, it seems to have done but little harm, and perhaps even good, in allowing those of us who felt like it to state our supposed grievances. It is the way we have in this country, in fact a good old English custom, to allow those who feel resentful to speak (or write) their minds and, having done so, even if it attains but little, we all feel the better for it. The final report of this committee has not as yet been drawn up, but we can now await its findings with a much greater feeling of tranquillity than seemed likely last year.

The year that has passed has been notable for two personal celebrations in the profession —the diamond jubilee of the graduation of Sir John M'Fadyean and the silver jubilee of Dr. O. Charnock Bradley's Principalship of the Edinburgh Veterinary College—two events in which we have all been delighted to participate.

On the other hand, we mourn the loss of many eminent members of the profession, amongst whom I would especially mention the late Professor Macqueen, Sir Arnold Theiler and Mr. Noel Pillers, men whom we could ill spare.

To our Society the success of the Scarborough Congress last September has been most gratifying. We were all proud to welcome such a large gathering in the county, which resulted in no less than 319 members, delegates and others visiting the Congress, truly a record in our history. Let us hope that before many years have passed we may yet welcome another such Congress in Yorkshire.

To a large body of the profession perhaps the most important legislative measure that has been passed is the Milk (Special Designations) Order of 1936, issued by the Ministry of Health. Great fears were expressed by many of our more timid members that this Order would spell ruin to the country practitioner; but what do we see? The handing over of the licensing of tuberculin-tested herds to the local authorities, coupled with the present exclusion of such herds from the levies demanded by the Milk Marketing Board, has led to an enormous increase in this class of herd. I cannot give you figures for the country as a whole, but for the administrative area of the West Riding of Yorkshire the change has been amazing. At the end of March, 1935, after the old Order had been in operation for twelve years, there were only 23 licensees of tuberculin-tested herds (then certified and grade "A" T.T.); at the same date in 1936, the number had risen to 32, but at the present time we have no less than 53 with a total of 2,820 cattle, or an average of approximately 53 head per herd. What, therefore, has been the result of this increase? It has made a vast difference to the profession: to the practitioner it has brought a great increase of work, which must have brought fresh "grist to the mill"; to the whole-time officer fresh and increasing responsibilities, although in their case not accompanied by the "grist." Not only has the number of animals to be tested gone up by leaps and bounds, but the two-monthly tests for new animals prescribed by the Order have provided such increased testing that it appears to be an almost daily duty for some veterinary surgeons, whose testing seems to be practically never ending. The system adopted in this county, whereby the testing is carried out by practitioners in consultation, when desired, with the whole-time staffs, is that which appears to be the most common in the country generally and so far seems to be working wonderfully well. Let us all pull together to make this work a success, so that not only is the profession benefited, but also the agriculturalist and, above all, the milk-consuming public.

The fate of these herds at present hangs in the balance, and I can only express the hope that the controversy between the Milk Board and the tuberculin-tested milk producers may end in a reasonable solution which will not ruin the financial outlook of the producers of this high-class milk, and thus curtail the increase or even greatly reduce the number of these herds. To make it impossible to produce tuberculin-tested milk at a fair profit would indeed be a calamity, the extent of which it would be difficult to gauge.

The National Veterinary Medical Association has been in touch with the Home Office as to its air raid precautions and has circularised all its Divisions on the subject. Your Council has

held a special meeting to consider the position and has communicated with every veterinary surgeon in Yorkshire—not only with those wise men who are members of this Society or of the Association, but also with those foolish ones who do not belong to the parent body nor to any of its Divisions—urging them to get into touch with the local secretary of the British Medical Association, the addresses of all of whom have been supplied. All veterinary surgeons are advised to attend the lectures which are being arranged for medical men, veterinary surgeons and dentists on anti-gas protection and treatment. A general lecture delivered by Dr. Beverley, of the Home Office, was given in Leeds in the middle of December and I regret to say that the attendance of our members was disappointing as regards numbers. In order to retain our professional dignity in the eyes of the public in the event of emergency, as well as to help ourselves, I cannot too strongly urge you all to attend these lectures. As they are being arranged locally it will not be necessary to travel long distances in order to be present. No one who was there could well avoid being deeply impressed by Dr. Beverley's lecture in Leeds and at the awful possibilities he envisaged—possibilities that are not the vision of a nervous brain, but, alas, only too true. Had you all been present at this lecture there would not have been any further need for me to impress on you the great importance of gaining all the knowledge you can on gas warfare. Let me remind you of the old adage that "God helps those who help themselves."

In my last address I referred to the accession to the Throne of H.M. King Edward VIII and expressed our loyalty and our hopes for a long and happy reign. Unfortunately events which I need not recapitulate have occurred and we now have a new King in the person of King George VI and his Consort Queen Elizabeth. I know well you would wish me to express on your behalf our loyalty and affection for them and to wish them long life and a truly prosperous reign. From their happy family life, so dear to the British public, everything points to our having an ideal pair to reign over us and we can only be deeply thankful that they were able and willing to step into the breach at a truly critical time for our country and the Empire.

It only remains for me to say that I wish you all individually, and our Society as a whole, a very prosperous and satisfactory New Year.

This address was received with prolonged applause.

Paper.—The President now introduced Professor R. G. Linton, of the Royal (Dick) Veterinary College, who had very kindly undertaken to read a paper entitled "What is Good Farming? A Veterinary Viewpoint." This paper was of intense interest to every member present and was followed by a long and very interesting discussion, in which the following members took part: the President, Messrs. Dixon, Sampson, Campbell, Powley, Scott, McKinna, MacGregor and Major Holland. Professor Linton then replied to the questions raised in the discussion and expressed the view that sooner or later some sort of State Veterinary Service would be set up, but stated that in his opinion all veterinary surgeons should not be State paid. He felt very strongly that every practitioner should have a laboratory at his disposal and that they (the practitioners) needed all the strength that could be given. Every whole-time official should have a laboratory of his own and should help the practitioner as much as possible. Such a position, Professor Linton continued, would create far more interest in the work. He referred to the scheme brought out by the National Veterinary Medical Association and stated that it was well worth very careful study. [Professor Linton's paper is reproduced earlier in this issue.—*Editor.*]

Colonel Dixon, in proposing a vote of thanks to the essayist for his most interesting and instructive paper, expressed the view that it might very usefully be published in the Agricultural Press—a view with which the majority of the speakers concurred. The vote of thanks was seconded by Captain J. W. Procter and carried with acclamation.

E. F. McCleery, *Hon. Secretary.*

ANIMALS IN FILMS: BILL TO PREVENT CRUELTY

The text has been issued of the Cinematograph Films (Animals) Bill, the object of which, a memorandum states, is to prohibit the public exhibition of films in the production of which suffering is caused to animals, or any films which depict the suffering of animals which is brought about by any means whatsoever, that is, by natural or artificial means.

The Bill prohibits the production or making and exhibition of any film, the producing or making of which involves suffering to animals; or any film depicting or purporting to depict combats with or between animals, or the suffering, terror, or rage of animals.

The penalty for contravention is a fine not exceeding £100, or imprisonment for a maximum of three months, or both.

There is a further provision that, "In any proceedings brought under this Act in respect of any film, the court may, until the contrary is proved, infer from the incidents depicted or purporting to be depicted by the film, that suffering to animals was involved in the producing or making thereof."

The Bill was presented by Sir R. Gower, and is supported by Colonel Moore, Sir G. Jones, Sir Cooper Rawson, Mr. Leach, Mr. R. Davies, Sir F. Sanderson, and Mr. Boyce.

IN PARLIAMENT

Livestock Industry Bill in Committee

Future of Country Markets

When the Livestock Industry Bill was further considered on Tuesday last by a Standing Committee of the House of Commons, presided over by Sir Cyril Entwistle, several supporters of the Government expressed fears for the future of country markets and small market towns because of the powers contained in the Bill for the reorganisation of livestock markets.

The discussion took place on Clause 14, which provides that no premises in Great Britain shall be used for holding a livestock market on or after August 1st, 1937, unless the premises were used for the holding of such a market some time during the year ended November, 1936. The clause makes an exception in favour of premises which are, for the time being, approved for the purpose of holding a livestock market by the Livestock Commission.

Sir Gifford Fox moved an amendment to make the clause apply to "cattle" markets instead of to livestock markets. He said that the object of this was to confine the operation of the Bill to markets where cattle were sold and to avoid interference with markets which sold sheep, pigs, and poultry, garden products, and all the other things that were sold on market days in small market towns. The subsidy was limited to producers of fat cattle, and as there was to be no subsidy for other producers he suggested that the proposals relating to the marketing reorganisation and the closing of redundant markets should be confined to cattle markets. It was a revolutionary and dangerous thing to contemplate the closing down of markets in small towns.

Suggested Limitation

Sir Edward Ruggles-Brise submitted another amendment to limit the application of the clause to "fat cattle" markets. This, he said, would further restrict the powers of the Commission by preventing interference with the customary marketing of store cattle and calves.

Mr. Ivor Guest supported the principle of the amendments and said that in the counties of Brecon and Radnor the fat cattle sold in the market towns represented, on the average, only 10 per cent. of the total livestock sold in those markets. There was widespread alarm in Wales at the Bill as it stood, and he hoped the Minister would give an assurance that these markets would not be penalised.

Mr. T. Williams said he hoped the Minister would resist this attempt to water down the market reorganisation proposals of the Bill.

Major Dorman-Smith said he could not vote for the amendments because he was afraid they might be storing up trouble for other livestock producers in the future. It might be that in a short time the producers of pigs and sheep would need assistance and the Minister of Agriculture would then have to ask the House of Commons to vote the funds needed. Such assistance might be refused if it could be said that nothing had been done to improve the marketing of pigs and sheep.

Sir Ernest Shepperson and Mr. Haslam also referred to the apprehension felt in country towns about the possible closing of markets.

Government Reply

Mr. Ramsbotham, Minister of Pensions, replying for the Government, said the Bill dealt not only with cattle but with sheep and pigs. Most of our markets were mixed markets where sheep and pigs were sold as well as cattle, and it would be impossible to reorganise markets if the reorganisation was confined to cattle alone. It would be impracticable to carry out the amendment suggested by Sir Gifford Fox unless they were to scrap the reorganisation proposals altogether. He was certain that this was not intended to be a wrecking amendment, but that would be its effect. It would be impossible to confine reorganisation to fat cattle markets because it was impossible to give a definition of fat stock, and cattle might be sold either as stores or as fat beasts according to the part of the country where they were sold. Apart from that, the marketing of store stock was equally in need of reorganisation.

As to markets where only a small part of the trade applied to fat cattle, it was provided in the Bill that livestock market Orders might be made so as to apply to a specified description of stock only and might make different provisions with respect to different description of livestock and with respect to different premises. With regard to the wider question raised it must be realised that the Commission itself had no power to close any market. The Commission could make proposals, but the responsibility of closing any market would rest with the Minister of Agriculture and Parliament. The Bill contained ample safeguards against any injustice being done in this matter. The Bill was designed to benefit farming and not to hinder it, and he could give an assurance that the market reorganisation proposals would be administered with the greatest care for all the interests affected. But they wished farmers to get better prices, and everybody realised that the marketing organisation was far from perfect.

Sir Gifford Fox withdrew his amendment and the amendment of Sir Edward Ruggles-Brise was negatived without a division.

Mr. W. S. Morrison, Minister of Agriculture, moved an amendment to provide that the approval of premises for the holding of livestock markets by the Commission shall be made "after consulting the Livestock Advisory Committee and such local authorities and other bodies as appear to the Commission to be representative of interests concerned."

The amendment was agreed to.

. . . . .

The following questions and answers have been recorded in the House of Commons recently:—

Cruelty to Animals (Penalties)

Lieut.-Colonel Moore asked the Home Secretary whether his attention has been drawn to the case of Harry and Margaret Lester, who were recently convicted at Uxbridge on the charge of brutally starving a dog to death; and whether he is satisfied that the present powers of magistrates are adequate to deal with offences of deliberate and sustained cruelty?

Sir J. Simon: Yes, Sir; I have seen a news report of the case to which my hon. and gallant Friend refers. The law confers on magistrates, however, power to impose for this class of offence imprisonment up to a period of three months, with or without hard labour.

Lieut.-Colonel Moore: In view of the growth of these revolting cases and the inadequate penalties imposed by magistrates, would the right hon. Gentleman consider circularising them,

A Pioneer Product

TRADE MARK 'PRONTOSIL' BRAND

PUERPERIN

A chemo-therapeutic remedy for the oral and parenteral treatment of

STREPTOCOCCAL INFECTIONS

Some Indications: Strangles, streptococcal pneumonia (foals), purpura hæmorrhagica, streptococcal joint-ill (cattle), tonsillitis, cellulitis, nasal catarrh, catarrh following distemper, general septicæmia, septic wounds. The prophylaxis and treatment of puerperal septicæmia and septic conditions following operations (e.g.—castration, ovariectomy, removal of nævi, cysts, fibroma).

Prontosil is issued in ampoules and tablets for the treatment of small animals (e.g.—cats and dogs).

Prontosil Album tablets are also available.

Packings suitable for use in cattle and horse practices will be issued shortly.

BAYER

BAYER PRODUCTS LTD., AFRICA HOUSE, KINGSWAY, LONDON, W.C.2.

PERSISTENT ECZEMA

It was arrested after a week—in a fortnight hair began to grow

No dog can forget an itching tender skin. Instinctively it scratches and rubs at its sore places—and makes them worse. And so, first of all, the dressing for a dog's skin must be *soothing*.

The first touch of Sphagnol ointment is coolness and comfort to sore skins. And Sphagnol, containing distillates of peat, is not only soothing but also antiseptic.

Those who use Sphagnol find it so effective that we receive hundreds of letters like the following:

"I used the Sphagnol ointment on a Pekingese who had persistent eczema. After a week the eczema was arrested, in a fortnight the hair began to grow, and during the last four months there has been absolutely no return of the trouble. (Signed) R.H.W.

Sphagnol peat ointment is prepared especially for the skin. **Try it—we will send you a free sample.**

Write to :—
Peat Products (Sphagnol), Ltd., Dept. W.83, 21, Bush Lane, London, E.C.4.

Sphagnol

SPHAGNOL VETERINARY OINTMENT 1/- PER TIN—POST FREE 1/2. 5/9 PER 1 LB. TIN—POST FREE 6/3
SPHAGNOL VETERINARY SOAP 10d. PER TABLET—POST FREE 1/-, OR OBTAINABLE FROM YOUR CHEMIST

Royal Veterinary College, London

(Founded, 1791.)

Principal and Dean:
PROFESSOR SIR FREDERICK HOBDAY, C.M.G., F.R.C.V.S., F.R.S.E., DR. MED. VET. (H.C.) Zurich

Acting Principal and Acting Dean:
PROFESSOR J. BASIL BUXTON, M.A., F.R.C.V.S., D.V.H.

Vice-Principal:
PROFESSOR G. H. WOOLDRIDGE, F.R.C.V.S., M.R.I.A.

MEMBERSHIP DIPLOMA OF THE ROYAL COLLEGE OF VETERINARY SURGEONS.

Complete Courses of Instruction are conducted in all the subjects of the Examination for this Diploma. The facilities, etc., afforded for the practical training of Students are unrivalled.

BACHELOR OF SCIENCE DEGREE, UNIVERSITY OF LONDON

The Professors of Chemistry, Biology, Anatomy, Physiology, Hygiene, and Pathology are recognised Teachers of the University, and conduct in their respective subjects courses which qualify for the Science Degree (B.Sc.), which may be taken concurrently with the above Diploma.

A short practitioners' Course, suitable for retired Army and Colonial Veterinary Officers who may desire to return to civilian practice, is held each term.

Full particulars of the above courses will be forwarded on application to The Secretary, Royal Veterinary College Camden Town, London, N.W.1.

B. D. H.

LAMB DYSENTERY PROPHYLACTIC (VACCINE)

This vaccine is made in the B.D.H. laboratories from the strain of *Cl. welchii* which is responsible for lamb dysentery.

B.D.H. Lamb Dysentery Prophylactic (Vaccine) is issued in bottles containing 50 c.c. and 250 c.c. respectively of the vaccine ready for injection.

It is available to every veterinary surgeon direct, or, if desirable, through his usual pharmacist supplier.

Literature on request

THE BRITISH DRUG HOUSES LTD. LONDON N.1

LDPV/1

pointing out that they have powers, and advising them as to their fuller use?

Sir J. Simon: I am in the fullest possible sympathy with the view that adequate penalties ought to be inflicted in these cases. The hon. and gallant Gentleman is not quite correct in one matter. These cases are very distressing, but the number of them, I am glad to say, is not increasing but decreasing, as the figures show. I have to bear in mind that our system necessarily leaves it for the court to decide what is the appropriate penalty in any given instance. I have no doubt that these questions will help to make sure, what I know is the case, that magistrates are fully aware of their powers.

Sir Robert Gower asked the Home Secretary whether he will consider appointing a Departmental Committee to investigate the adequacy or otherwise of the penalties imposed on persons for cruelty to animals?

Sir J. Simon: As I have already said in reply to a previous question, I entirely share the desire that adequate penalties should be inflicted for such offences, but it is for the convicting court to decide, in its discretion, what is the proper penalty to impose in any particular case within the maximum allowed by law, and the exercise of that discretion could not properly be made the subject of inquiry by a Departmental Committee.

. . . . .

Milk (Pasteurisation)

Mr. R. C. Morrison asked the Minister of Health whether, in view of the evidence contained in the annual report of the chief medical officer of his Department for 1935 of serious outbreaks of scarlet fever solely due to the sale of raw milk, he will consider the making of regulations providing for the compulsory pasteurisation of all milk?

Sir K. Wood: I have no power to make such regulations.

In view of the attention directed by Lord Linlithgow to the problem of livestock and milk supply in India, the Calcutta Corporation has appointed a special committee to devise means and submit a scheme, within two months, to improve the livestock and milk supply of the city. The committee includes Sir Harisankar Paul, Mr. C. C. Biswas and Dr. K. S. Roy. Among outside members is Sir M. N. Mukherji and the Director of Agriculture, Bengal, and the Principal of the Veterinary College.

The Editor acknowledges, with thanks, the receipt of the following:—

Communications from Messrs. D. J. Anthony (Brierley Hill), J. K. Bateman (Northaw), W. P. Blount (Seaford), W. Ross Cockrill (Glasgow), H. V. Hughes (Liverpool), Dr. J. N. Oldham (London), Lieut.-Colonel J. W. Rainey (Bloemfontein, South Africa), Mr. J. C. Rix (Bexleyheath), Captain John Smith (Kenley), Messrs. E. L. Taylor (Weybridge), G. A. Tomlin (London) and Colonel G. K. Walker (Abingdon).

Reports of meetings of the Dumfries and Galloway Division, N.V.M.A., and of the Veterinary Medical Association of Ireland, from Mr. Geo. A. Sangster and Mr. J. M. Murphy, respective Hon. Secretaries.

Notes and News

The Editor will be glad to receive items of professional interest for inclusion in these columns.

Diary of Events

Mar. 8th.—Royal Veterinary College, London, Annual Ball (in aid of the Re-Building Fund), Park Lane Hotel, W.1.

Mar. 12th.—Meeting of the Midland Counties Division, N.V.M.A., at Birmingham, 2.30 p.m.

Mar. 15th.—Meeting of the Editorial Committee, N.V.M.A., at 2, Verulam Buildings, Gray's Inn, W.C.1, 4 p.m.

Mar. 17th.—V.V.B.F., Ladies' Guild: Dance, Princes Galleries, Piccadilly, W.

Mar. 19th.—Royal (Dick) Veterinary College Extension Fund Ball, Assembly Rooms, Edinburgh, 10 p.m.

Mar. 19th.—Annual General Meeting of the Southern Counties Division, N.V.M.A., at Salisbury, 2.30 p.m.

Mar. 20th.—Annual General Meeting of the North of England Division, N.V.M.A., at Newcastle-on-Tyne.

April 1st.—Annual Fees due to R.C.V.S.

April 5th.—Last day for applications for tickets for R.C.V.S. Annual Dinner.

April 5th.—Meetings of Committee, N.V.M.A. (Place and times to be announced later).

April 6th.—Extraordinary General Meeting of members, N.V.M.A. Meetings of Committees and Council, N.V.M.A. (Place and times to be announced later).

April 7th.—R.C.V.S. Committee Meetings.

April 8th.—R.C.V.S. Committee Meetings.

April 8th.—R.C.V.S. Annual Dinner, May Fair Hotel, Berkeley Street, W.. 7.30 p.m.

April 9th.—R.C.V.S. Committee and Council Meetings.

May 6th.—Nominations for Election to R.C.V.S. Council due.

May 12th.—Coronation Day.

May 13th.—Entries for D.V.S.M. Examination due.

May 20th.—R.C.V.S. Voting Papers issued.

May 27th.—R.C.V.S. Voting Papers to be returned.

June 3rd.—R.C.V.S. Annual Meeting.
Victoria Veterinary Benevolent Fund Annual Meeting.

June 10th.—D.V.S.M. Written Examination begins.

June 14th.—D.V.S.M. Oral and Practical Examination begins.

June 23rd.—R.C.V.S. Committee Meetings.

June 24th.—R.C.V.S. Committee Meetings.

June 25th.—R.C.V.S. Committee and Council Meetings.
July 5th.—R.C.V.S. Written Examinations.
July 6th.—R.C.V.S. Written Examinations.
July 8th.—R.C.V.S. Oral Examination begins.
July 26th-30th.—N.V.M.A. Congress at Bournemouth.

* * * * *

PERSONAL

Appointments to His Majesty's Household

Our readers will have been gratified to learn, from Press announcements following the publication of the information in the *London Gazette* of Tuesday last, that the King has been graciously pleased to appoint Major Sir Frederick Hobday, C.M.G., F.R.S.E., and John Willett, Esq., M.R.C.V.S., Honorary Veterinary Surgeons to His Majesty, the appointments to date from March 1st, 1937.

Sir Frederick Hobday and Mr. John Willett, who is President of the Royal College of Veterinary Surgeons, now have the distinction of holding appointments continuously as Honorary Veterinary Surgeons to their Majesties the late King George the Fifth, King Edward the Eighth, and King George the Sixth.

. . . . .

Appointments.—At a meeting of the Diseases of Animals Acts Sub-Committee of the East Sussex Agricultural Committee on February 16th, 1937, it was resolved that Messrs. J. W. R. Pearce, M.A., B.Sc., M.R.C.V.S., and D. H. MacDonald, M.R.C.V.S., be appointed additional District Veterinary Officers for the County of East Sussex.

Mr. W. G. S. Angus, M.R.C.V.S., B.Sc. (Agric.), has been appointed Assistant Veterinary Officer to the West Sussex County Council.

. . . . .

Members of the profession will be glad to know that on the front page of last week's issue of the *Field* there is an excellent large-size reproduction of the portrait recently presented to Professor Sir Frederick Hobday, C.M.G., F.R.C.V.S.

* * * * * *

GENERAL OBITUARY

Mr. Stanley Paton Grubb

It is with much regret that we record the death, at the early age of 33 years, of Mr. Stanley Paton Grubb, a director of Messrs. H. R. Grubb, Ltd., of Croydon, printers of the *Veterinary Record*, which took place on Monday last following an emergency operation at the Westminster Hospital. In all his work in connection with the reproduction of the *Record*, and particularly that in his capacity as "printer's artist," which was of a very high order of accomplishment, Mr. Grubb, junior, showed an ability and a conscientiousness which were highly valued both by the firm itself and by the journals for the printing of which they are responsible. Our deep sympathy is extended to Mr. Henry Richard Grubb in the loss of his only son, and to the bereaved wife and child.

SEVENTY-FIFTH ANNIVERSARY OF THE GLASGOW VETERINARY COLLEGE

The belief of James McCall, in establishing his veterinary college in Glasgow in 1862, that the 1823 foundation in Edinburgh still allowed scope for a second veterinary training centre north of the Border, with particular reference to the needs of the West of Scotland, may, despite the long controversy on the matter, be held to be at least afforded evidence in support by the fact that this year finds it celebrating its seventy-fifth anniversary and sharing to the full in the great influx of students common to all our colleges.

Reference to the veterinary literature of the period reveals no mention of a celebration in connection with the jubilee of the Glasgow College, but, as will be observed in our notices column, the Students' Representative Council has ensured, in true student fashion—*i.e.*, by arranging a celebration dance—that due note shall be taken of the later and therefore more important anniversary. We trust that all our readers for whom attendance at the function is a possibility will be at St. Andrew's Hall, Glasgow, on Friday next. Arrangements have been made for 600 guests.

* * * * *

LEGAL NOTES

Foot-and-Mouth Outbreak: Vital Information Withheld.—When Sydney James Housden, farmer, of Witherley, Leicestershire, was fined £20, with £14 2s. costs and £5 5s. advocate's fee, at Market Bosworth Police Court, for obstructing an Inspector of the Ministry of Agriculture by concealing the origin of a cow, as the result of which, on the outbreak of foot-and-mouth disease, much wider restrictions were enforced, the Bench said they were unanimously of opinion that vital information had been withheld, thus preventing the officials taking steps to stop the spread of the disease.

The cow, it was stated, was bought at Bakewell, sent to Uttoxeter, and then sold to Housden at Witherley, and there was an outbreak of foot-and-mouth disease on the farm of a man to whom Housden sold the cow.

Prosecuting counsel said that if Housden had told the truth when the officials first visited him, the animal could have been kept under observation and the outbreak probably confined. However, as the situation became so acute a widespread order was enforced in the district, and the Christmas markets were closed.

For the defence, it was said that Housden made a genuine mistake, and the only obstruction was that he said the cow was on the premises when it had been moved.

. . . . .

Parasitic Mange Orders 1911 *and* 1918.—The London County Council were the prosecutors in a case heard at Clerkenwell on the 24th ult., when a fine of £6 with £3 3s. costs was imposed on a firm for working on the public highway a horse affected with psoroptic mange, and with not notifying the existence of the disease in this horse and in other horses. Mr. W. J. Leyshon, a veterinary inspector in the Public Control Department, testified to his having seen a diseased horse at work in the street, and upon his subsequent inspection of animals stabled in various parts, to his having found ten other horses affected with scheduled mange.

LIVESTOCK INDUSTRY BILL

Farming Opinion on Experimental Abattoir Proposals

"Farming opinion has been so occupied with the subsidy provisions in the Livestock Bill, and has been so anxious to strengthen them and to obtain adequate assistance for the industry, that little attention has been paid to Part V, dealing with experimental abattoirs," says the *Farmers' Weekly*. "These proposals have far-reaching consequences and ought to be fully debated by all sections of the industry.

"In England and Wales there are 100 public abattoirs which handle 25 per cent. of the total slaughtering; in Scotland 150, which handle 90 per cent. They were built, mostly by local authorities, to simplify the inspection of meat, and while some of them (notably at Edinburgh) are on up-to-date lines, none cover all the requirements which the Government have in mind.

"These requirements have not been disclosed, but it is certain that the first principle to be adopted will be that of single control, with specialised gangs employed directly by the management. Many of the existing abattoirs do not employ their own men; they merely provide a centre where butchers kill their stock. The regular employment of specialised workers, it is claimed, will result in more efficient and economical methods, a higher standard of hygiene and greater uniformity in condition and appearance. The full use of the by-products, often wasted under the present system, will be secured. The multi-floor system, to prevent one operation being a hindrance to another, will probably be adopted. To ensure a sufficient throughput there will be powers to close (with compensation) private slaughterhouses in the areas concerned. This, of course, already has been done in towns where abattoirs have been established. Powers to regulate slaughtering in a wider area are also to be taken.

"Most of the opposition so far has been directed against the latter provisions, emphasising the danger of the zones being drawn so wide that there will be serious interference with local butchers who now kill and sell their meat on the spot. It is not likely, however, that the fight on this question will take place in Parliament; the zones will be settled after an inquiry by the proposed Livestock Commission. Opponents of the scheme, while acknowledging that the meat factory has become a vital link between the producer and the trader in the meat-exporting countries and in the United States, say that we cannot judge by the results in other countries where conditions are entirely different.

"All these objections should be fully examined, but most of them appear to affect the detail rather than the principle of the measure. They are not, in our opinion, sufficient to justify a refusal to try out the system in this country on a limited scale. When it is in complete working order, we shall be able to judge whether it will improve the marketing of home beef and help us to meet the highly organised competition from overseas. We should, therefore, be willing to co-operate in putting these ideas to the test."

* * * * *

DEPUTATION ON MILK POLICY

The Minister of Agriculture, Mr. W. S. Morrison, recently received a deputation from the National Farmers' Union and the Milk Marketing Board, who placed before him the anxieties of milk producers concerning the present situation and the trend of future policy.

Mr. J. H. Wain expressed the grave anxieties of producers at the present position in the industry. There had been a considerable rise in the costs of milk production with no compensating increase of producers' receipts. During the past few months assistance had ceased to become payable under the provisions of the Milk Acts, although it was never more needed than at present. He asked the Minister to endeavour to find a means of alleviating the immediate position and to remedy the anomalous situation which obtained under the Milk Acts. Mr. Wain also referred to the need for an early pronouncement of the Government's long-term policy for the industry. He mentioned that the Union's application to the Import Duties Advisory Committee for increased duties on milk products had met with no response. Trade agreements with foreign countries affected the position, and milk producers were apprehensive as to the ability of the Government to devise measures calculated to provide producers with more remunerative prices by the commencement of the 1937-38 milk contract year.

Mr. T. Baxter, speaking on behalf of the Milk Marketing Board, emphasised that the Milk Acts were not giving the assistance to milk producers which they had anticipated, and that the Board's receipts for manufactured milk had fallen far short of the guaranteed sum of 6d. per gallon in winter which the Acts originally aimed to provide. He asked the Minister to bring into operation as soon as possible the amendments to the Milk Marketing Scheme which the Board had submitted to him. Mr. Baxter also mentioned the great difficulties under which the Board were having to administer the scheme and the need for an early announcement of the Government's future policy towards the milk industry. Captain C. G. Y. Skipwith outlined the particular problems of the producer-retailers of milk.

In his reply to the deputation, Mr. Morrison said that the Government were giving their serious attention to the whole milk problem which concerned not only the Agricultural Departments but others such as the Ministry of Health. He welcomed the opportunity of this discussion, and would give careful consideration to the case that had been put before him. He was glad to learn that he might shortly receive the views of the Milk Marketing Boards of Great Britain and of the National Farmers' Union upon the recent Report of the Milk Reorganisation Commission. These views would be of assistance in the elaboration of long-term policy. As regards the amendments to the existing Milk Marketing Scheme, which, as they appreciated, raised very difficult and complex questions, the Minister said that he was still awaiting the Report of the Commissioner who held the Public Inquiry. He assured the deputation that as soon as the Report was received, it would be dealt with as expeditiously as possible.

* * * * *

OUT-DOOR HERD ATTESTED

Lord Cochrane's herd of 200 Ayrshires at Cults in Fifeshire is included in the latest additions to the list of Attested herds, states the *Farmers' Weekly* and adds: "Certified milk is produced and retailed mainly in St. Andrews, and apparently Lord Cochrane finds that out-door dairying can maintain a low bacterial count. In three years he has not encountered any mastitis

or udder trouble of any kind among his cows. His land is mainly sandy loam, and that fact may be noted, because many farmers believe that out-door dairying cannot be carried on successfully in heavy and cold land.

"The out-door system of dairying, Lord Cochrane says, suits grass-drying output—he dries his own grass—as the treading by the cows promotes regular growth."

* * * * *

HUNTERS' IMPROVEMENT SOCIETY

Sir Walter Gilbey Honoured

Lord Middleton, presiding at a Council meeting of the Hunters' Improvement Society, reported the election of 308 new supporters to the Society, and the members expressed their thanks to the President for his efforts in securing such a large addition to the membership.

The President then proposed that Sir Walter Gilbey, Bart., be elected a life honorary member of the Society. Lord Middleton stated that Sir Walter's interest in horses generally and in riding horses in particular, was well known, and that it was difficult to think of any organisation which served the interests of the horse breeder and horse user of which Sir Walter was not a keen supporter. Sir Walter had joined the Hunters' Improvement Society in 1885, had been a member of the Council for many years, and had twice been President. In electing him a life honorary member they were paying him a compliment that was very seldom paid, as only three other gentlemen in the history of the Society had received this honour. The proposal was received and carried with acclamation, and Sir Walter Gilbey, in thanking the Council for the honour thus shown to him, expressed the hope that the young men of the present generation would enter into membership and thus reap the benefit of the work that had been done in the past by the Society.

The Council deeply deplored the loss to the Society of Mr. E. Guy Fenwick whose death occurred recently. Mr. Fenwick had served on the Council for many years, and had been a member of the Society since 1888. The deep regret of the Council will be shared by all those who knew his keen interest in horse breeding.

The President announced that the Right. Hon. Earl of Athlone, K.G., would visit the coming thoroughbred and hunter show on Wednesday, March 10th, at 3 p.m., and present the King George V Cup for the champion thoroughbred stallion. A very satisfactory entry had been received, *viz.*: 88 thoroughbred stallions, 83 young hunter stock, and 79 riding horses. The Council noted with interest that there would be 23 stallions entered which were new to the light-horse-breeding scheme, of which 20 were under ten years of age, and that in all 37 stallions were under ten and, therefore, eligible for the special premiums for young stallions. Six groups of three or more young hunters by the same sire would be entered in the produce class.

The annual general meeting was fixed for Wednesday, March 10th, at the Royal Agricultural Hall. It was announced that at this meeting, Major Sir Robert Spencer-Nairn, Bart., of Leslie House, Leslie, Fife, would be elected President and the name of Lord Mildmay, of Flete, would be submitted to the members for election as President-elect (*i.e.*, President in 1938). This would be Lord Mildmay's second period of office, as His Lordship had previously occupied the Presidential Chair in 1923.

H.M. STATIONERY OFFICE (DUBLIN) PUBLICATIONS

The undermentioned have been published on behalf of the Government of the Irish Free State. Copies can be purchased directly from the Government Publications Sale Office, 5, Nassau Street, Dublin, C.2.

	Price Net. s.	d.	*Postage.* s.	d.
Statutory Rules and Orders:—				
360/36. Milk and Dairies Act, 1935 (Date of Commencement) (No. 1) Order, 1936	0	1½	0	0½
363/36. Milk and Dairies Act, 1935 (Appeals to District Court under Section 41) Regulations, 1936	0	1½	0	0½
370/36. Slaughter of Animals Act, 1935 (Dublin County Borough and Dun Laoghaire Borough)(Date of Commencement) Order, 1936	0	1½	0	0½
371/36. Warble Fly (Treatment of Cattle) (Amendment) Order, 1936	0	1½	0	0½

* * * * *

THE SAFETY OF PREMEDICATION

"The use of formidable accessory agents given before the anaesthetic proper is so frequent at the present time that it is important to know what, if any, disadvantages may accompany the many undoubted benefits which the practice confers on most patients," states *The Lancet* (January 2nd) and continues: "Dr. Dawkins in order to determine the answer to this question contrasts* two series of patients, the first operated on between 1921 and 1925 and the second between 1931 and 1935. Each series comprised more than 3,000 operations, and altogether he has for his study analysed the histories of over 16,000 anaesthetics given at several London hospitals and in private practice. Conclusions drawn from a study of this dimension are worthy of serious notice, and perusal of this little work gives information with regard to almost every complication that has been associated with anaesthesia. The matter is well arranged and tabulated so that the author's findings are easily perceived. His final conclusion is that during the last five years definite progress has been made towards the reduction of anaesthetic complications. Injudicious use of basal narcosis, however, increases the risk of pulmonary troubles. Some of the figures in the many tables provide an interesting study. Generally speaking they agree with commonly held opinion both as regards mortality and morbidity. For example, the hope that spinal anaesthesia might save patients from lung trouble, not infrequent after inhalation, a hope long since dissipated, is here again shown to be without foundation. Pulmonary morbidity is shown by the author at 11·5 per cent. after spinal anaesthesia, and at 5·9 per cent. after ether. Chloroform shows the same pulmonary morbidity as ether, but the number of patients is so small that much value cannot be placed on this conclusion."

*On the Incidence of Anaesthetic Complications and their Relation to Basal Narcosis. By C. J. M. Dawkins, M.A., M.D., D.A. London: John Murray. (1936.) Pp. 56. 3s. 6d.

THE DIAGNOSTIC VALUE OF HORMONE ASSAYS IN PREGNANCY

"The excretion of gonadotropic substances in the urine, recognised by a qualitative test on mice, is the basis of the Aschheim-Zondek reaction for detection of early pregnancy," observes the *Lancet*, in an annotation (December 26th). "Quantitative tests have indicated the approximate course of their excretion during pregnancy, and some attention has been given to the differences between individual cases. In our present issue Dr. Browne and Dr. Venning describe how they have followed in detail the variation in urinary gonadotropic substances throughout pregnancy in five cases. This laborious work has led to several important conclusions. In the first place, these cases did not follow the generally accepted normal curve of amounts excreted at different stages of pregnancy. Further the results demonstrate, in confirmation of Heim, the great individual variations that may occur, and suggest that big variations are highly significant of the state of the pregnancy.

"It may be argued that, however laborious the work, an investigation of this kind must be extended to very many more cases before generally valid conclusions can be drawn. But this extension must depend on advances in technique; for the stage is not yet reached at which cases examined in different laboratories can be directly compared and the data accumulated to form the basis of adequate generalisations. Several methods of extraction of the gonadotropic fraction from urine are known, but there is no general agreement about the best. The means of assay are in a still greater state of confusion: with different methods, different stocks of animals, and without any common standard of comparison, results from different laboratories are only broadly comparable. Two workers might agree that gonadotropic material reaches a maximum concentration at a certain period of gestation, but it is highly unlikely that they would agree on a numerical value for that concentration. That is why intensive investigation is necessary with the object of finding and establishing optimum methods of extraction and assay and of contriving some common unit of biological activity preferably in the form of a standard preparation. These general considerations must certainly not be taken as belittling the pioneering work of Browne and Venning, but rather as a plea for conditions that will make more of such work possible.

"Dr. Browne and Dr. Venning go on to propose an interesting theory to account for the course of excretion of gonadotropic material, according to which the care and maintenance of pregnancy is the task of the ovary until the placenta, with its own gonadotropic hormone, has worked itself up into such a state of activity that it is producing enough progestin and oestrin to take over the burden. The maximum of urinary gonadotropic excretion is then at the period when the autostimulation of the placenta is at a maximum, but its pregnancy-maintaining function has not yet come into full production. After this, either the stimulation falls off, or the stimulated cells within the placenta absorb increasing quantities of the hormones. The application of such a theory to the interpretation of abnormalities of excretion may prove very useful in practice. It is sufficient to refer here to the case described in which abnormally low excretion in the early days of pregnancy was associated with an ectopic gestation with little living chorion, and the suggestion that, although the qualitative test may be positive, low values, obtained by quantitative estimation, generally imply that the products of conception are dead or dying."

* * * * *

B C G VACCINATION OF HUMAN BEINGS IN SWEDEN

Veterinarians who have come to decide that the prevalence of tuberculosis among cattle on certain farms in their practices is very high and that this (as well as other economic considerations) rules out attempts at complete eradication must await with interest the results of any properly conducted tests of the efficacy of control by preventive inoculation. So far, B C G vaccination appears to hold the field as the method of choice, and the promising results of the carefully planned work carried out by Professor Buxton and his colleagues at Cambridge suggest strongly that good use can be made of it provided the inoculations are performed in a definitely prescribed manner. Parallel attempts to control the disease by vaccination in the human subject have not found favour in this country, and so investigation of the method has not been carried out so extensively as it would probably have been otherwise.

In some countries in Europe, in spite of the recorded set-backs, medical workers have persevered with the system, and a short review recently published of the work carried out in Sweden reads very encouragingly. "If the Swedes," states the *Lancet*, in a recent annotation, "have in some respects departed from the principles laid down by Calmette with regard to B C G and the route by which it is administered, they have more than made good their digressions from the path of conformity by supplying controlled tests. From a lecture by Professor Israel Holmgren,* of Stockholm, it appears that expert Swedish opinion is, on the whole, definitely in favour of B C G vaccination. The most convincing evidence comes from the county of Norrland where Professor Näslund supervised a large-scale test under the aegis of the Swedish National Association against Tuberculosis. Between 1927 and 1933 the children given B C G numbered 7,765. The tuberculosis mortality was about five times higher among the controls than among those receiving the vaccine, and as all concerned were convinced that the conditions under which the children lived were approximately identical for the two groups, a favourable verdict could not be evaded. Professor Holmgren uses the B C G provided by Dr. Anders Wassén, of Gothenburg, and he has found that the abscesses easily provoked by large and superficial injections can be avoided by giving it subcutaneously in small doses and at long intervals. It can also be given with impunity by intramuscular or intravenous injection: with an experience of some 200 intravenous injections, Holmgren has seen no more serious reaction to them than a transient rise of temperature; but on the whole he prefers as a routine measure deep subcutaneous injections for adults. The vaccine prepared by Wassén contains 0·5 mg. of bacilli per c.cm., and of this Holmgren gives a minimum of 0·1 mg. and a maximum of 0·5. After describing the high and varied tuberculosis morbidity in the personnel of his hospital of recent years, he concludes that

*Hygiea (Stockholm), October 31st, 1936.

the way to reduce this morbidity is to treat every new member of the staff with BCG if he or she is tuberculin-negative; and he is inclined to extend this benefit also to tuberculin-positive entrants."

* * * * *

DIPHENYL COMPOUNDS AND MAMMARY GROWTH

In a letter to the Editor of *Nature*, appearing in the issue of January 23rd, 1937, Dr. Gordon Allison Grant, of the Department of Biochemistry, Lister Institute, observes: "Dodds and Lawson* have found that it is possible to obtain the oestrus response in castrated animals with substances with do not contain the phenanthrene nucleus. Various dihydroxydiphenyl compounds were tested and found to be active if the two hydroxyl groups were in the *para* position. Certain other compounds, for example, diphenyl-α-naphthyl carbinol, were also found to be active.

"Since these substances have oestrogenic properties, it might be expected that they would also function as initiators of mammary growth. Three compounds have been investigated for this effect, *p-p'*-dihydroxy diphenyl, 4-4'-dihydroxy-3-3'-dimethyl diphenyl, and diphenyl-α-naphthyl carbinol. The compounds, suspended in sesame oil, were injected subcutaneously into young adult male guinea-pigs, 100 mgm. being given one a week for three weeks.

"With the diphenyl-α-naphthyl carbinol, nipple growth commenced in a few days, and at the end of the three weeks the nipples had reached a size comparable to that at the end of the first pregnancy in the adult female. Histological examination revealed a limited duct growth, and several fairly extensive lobules of acinar tissue were present. Since the testicles were enlarged, and in some cases protruded through the abdominal wall, it is possible that the compound produced its effect through the endocrine system, and that the mammary response is perhaps due to increased secretion of testosterone. Collip, McEuen, and Selye† have found that testosterone can cause the development of acinar tissue in the mammary glands of male animals; though Turner and Gomez‡ state that oestrogenic hormones cannot cause growth of mammary parenchyma in completely hypophysectomised animals, the only effect observed being an extensive growth of the nipple. The answer to the question whether diphenyl-α-naphthyl carbinol acts directly or indirectly in promoting mammary growth must therefore await the results of experiments with castrated and hypophysectomised animals.

"In the doses given, the *p-p'*-dihydroxy diphenyl caused a slight but definite response, while the 4-4'-dihydroxy-3-3'-dimethyl diphenyl was inactive.

"These observations were made during the progress of some experiments designed primarily to investigate the possible effect of the above compounds on lactose synthesis in the mammary gland."

*Dodds and Lawson. *Nature*. *137*. 996. (1936.)
†Collip, McEuen and Selye. *Amer. J. Physiol.* 116. *Proc.* 29. (1936.) *Proc. Soc. Exp. Biol., N.Y.* *34*. 201. (1936.)
‡Gomez and Turner. *Proc. Soc. Exp. Biol., N.Y.* *34*. 320. (1936.)

* * * * *

Erratum.—In Mr. Hall Masheter's clinical communication "Yew Poisoning in Cattle" (*V.R.* **49. 9. 265**) in line three of paragraph one, *for* "killing" *read* "bulling."

Correspondence

Letters to the Editor should reach the Office not later than by the first post on Tuesday morning for insertion in following Saturday's issue.

All correspondence must bear the name and address of the contributor for publication.

The views expressed in letters addressed to the Editor represent the personal view of the writer only and must not be taken as expressing the opinion or having received the approval of the N.V.M.A.

* * * * *

R.C.V.S. ANNUAL DINNER

To the Editor of the Veterinary Record

Sir,—It will be noticed by the publication in your paper of an announcement of the event, that the Council of the Royal College of Veterinary Surgeons are holding a dinner on April 8th next and have for the first time permitted members to bring ladies as their guests. Owing to this new departure it is expected that there will be a great increase in the numbers attending the function. It would facilitate the work of the Dinner Committee if early application is made for tickets.* There might be considerable disappointment if the available space was inadequate to accommodate those who leave it too late.

Personally I hope, it being Coronation Year, that we shall have a large and representative attendance.

Yours truly,
J. Willett, *President.*

1, Marylebone Road,
N.W.1.
February 27th, 1937.

*In this connection, we would direct our readers' attention to the ticket application form to be found in the advertisement pages of this issue, and the insertion of which will, it is hoped, promote a prompt response to the President's request.—*Editor.*

* * * * *

"DICK" COLLEGE EXTENSION FUND

To the Editor of the Veterinary Record

Sir,—I should be very grateful if you would spare me a little space in which to address an appeal to graduates, friends and well-wishers of this College.

It is now fairly well known that we are seeking to make such additions to the existing College buildings as will meet the most urgent needs of efficient teaching in accordance with modern standards and thus sustain the repute of veterinary professional training. To do this, it is necessary for us to raise some £20,000. In these days of princely benefactions this may seem a small sum; but, in the absence of a princely benefactor, it cannot be accumulated without effort, and we do not want to employ any method that would not meet with the approval of alumni and the profession generally.

To a number of graduates and other members of the profession grateful thanks have to be returned for donations already received. If every graduate were to contribute correspondingly and in accordance with his means, a very considerable sum would be the result. May I, therefore, make an earnest appeal to alumni and ask them to help an institution in which they sojourned awhile—and possibly profited by that sojourn. Whatever they give will be doubled by a contribution by the State.

Yours faithfully,
O. Charnock Bradley.

Royal (Dick) Veterinary College,
Edinburgh, 9.
March 1st, 1937.

EXTRA-MURAL CLINICAL INSTRUCTION

To the Editor of the Veterinary Record

Sir,—As you are doubtless aware, the Royal College of Veterinary Surgeons now requires that, before presenting himself (or herself) for the Final Examination, each candidate must produce a certificate or certificates from one or more practitioners that he (or she) has had experience in general practice among the larger farm animals for a period of at least six months and has attended six cases of parturition in these animals.

Such experience is, of course, of the greatest benefit to students irrespective of the particular work in which they may be engaged after qualifying.

Unfortunately, however, our women students experience considerable difficulty in obtaining this clinical instruction owing to the apparent reluctance of practitioners to have them for extra-mural teaching.

I shall be most grateful, therefore, if you will allow me to appeal to those members of the profession whose practices lend themselves to such instruction to assist the students to fulfil this requirement of the Royal College of Veterinary Surgeons.

I hope that practitioners will respond to my appeal and inform me of their willingness to take women students and the fees which they require for this tuition.

Yours obediently,
J. B. Buxton,
Acting Principal and Dean.

Royal Veterinary College,
Great College Street,
Camden Town,
London, N.W.1.

March 1st, 1937.

* * * * *

THE "ACCREDITED MILK" CONFERENCE

To the Editor of the Veterinary Record

Sir,—It is regrettable that the *Morning Post* did not first of all make certain that the allegations made by Dr. Savage were in accordance with fact, and not the product of his own imagination.

The assertion that routine veterinary inspection has done nothing to reduce tuberculosis in cows should be capable of easy denial by reference to the reports published by those counties in which this inspection has been in existence long enough to enable them to serve as the basis for the expression of a definite opinion. Dr. Savage could have contributed something of value and incidentally have secured our wholehearted support and that of the educated public, if he had stated that until it was made compulsory for all milk cattle to be inspected and only milk from such cows to be sold, no progress in eradicating the disease either in man or bovine could reasonably be expected.

I do not wish to be unduly critical of his own profession, but has it made much headway in eradicating the disease in man? It is true that its incidence and mortality rate may have been reduced in recent years, but is this not probably, if not wholly, due to a better understanding of sanitation and improved living conditions on the part of the population?

The medical profession is sharply divided on the question of the pasteurisation of all milk destined for human consumption. I hope that the authorities will pay no attention to senseless palaver. They have already been stampeded into prohibiting the use of living abortion vaccine in tuberculin-tested herds, but are taking no steps with regard to the cow which is naturally infected with the disease, and which is regarded as the most dangerous as a transmitter of undulant fever through her milk. It is obvious that if they did, there would be a definite milk shortage, but the prohibition enforced does nothing to lessen the danger, if it is momentous.

I do not consider that there would be any value in setting up a committee as suggested by my neighbouring colleague, Mr. G. W. Searles. The idea is excellent, but past experiences of such committees and their achievements leave me cold.

During the past few months, the private practitioner has been handed over to the various local authorities to be used according to their whims. What protests have been made have been feeble, and there the matter has ended.

The views of the profession and the rights of the profession (both the whole-time branch and the private practitioner) should long ago have been put forward in the quarters that matter. I am firmly of the opinion that we, as a profession, will never have the status or the rights which are our due, until we have effective representation, direct or indirect, in the House of Commons.

I have repeatedly urged the establishment of a Department of Animal Health, manned by whole-time veterinarians, making the fullest possible use of all our research workers and private practitioners, and ensuring freedom of action for our whole-time veterinary officers who, in not a few instances, have to act under authority outside their profession. I have no fear of unprofessional conduct towards the private practitioner from our whole-time colleagues, but I regret to say that I have not the same confidence in those outside our profession.

Yours faithfully,
J. F. D. Tutt, F.R.C.V.S.

Winchester.

February 24th, 1937.

* * * * *

CRUELTY TO WATCH-DOGS ON FARMS

To the Editor of the Veterinary Record

Sir,—It would appear rather common of late amongst writers to the *Record* to sling mud at the English farmer. We read of wanton cruelty to farm stock in general and now to farm dogs. I should like to ask which is the nearer to nature, the dog housed in the barrel, or the pampered, over-fed, over-doctored, never exercised dog lying on a silken cushion in a flat in one of our large cities. My experience of farm dogs, and it is long and varied, is that he is the most important animal on the premises. When ill the male portion as well as the female part of the household worry me more than if it was the best horse or cow on the place. Apart from the sentimental aspect, every farmer knows it never pays to ill-treat an animal. I *never* at any time have any trouble with cruelty in farm stock—a word to the owner, if I think it exists, is sufficient. I have always worked amicably with the R.S.P.C.A., and admire the tact and common sense of its inspectors; it is the busybodies, interfering with things they do not understand, who give all the trouble.

Yours faithfully,
Wm. A. Campbell.

Boroughbridge.
February 27th, 1937.

To the Editor of the Veterinary Record

Sir,—May I express my thanks to Mr. Heathcote for drawing attention to the heartless treatment of watch-dogs in Kent. I am not aware that this happens here in the West to a like extent, but I never lose an opportunity of reminding farmers that as each cattle- or sheep-dog does the work of two lads, they should be better treated than they usually are, by having regular meals, adequate sleeping quarters and attention to their coats when necessary. I have passed Mr. Heathcote's suggestions on to the R.S.P.C.A. Headquarters, with the suggestion that they instruct their inspectors to investigate.

May I also thank you, Sir, for reprinting the leaflet, which was written in popular language for farmers and others concerned? I am amplifying it for re-issue by the Ulster S.P.C.A. and including such other forms of preventable cruelty as the treatment of "broody" fowls, the indiscriminate administration of drugs to animals (unable to protest) by empirics, and I will not forget farm dogs.

My view is that in those cases where actual cruelty may be difficult to prove, the animal, being inarticulate, should always have the benefit of any doubt; for, although animals as a whole are less sensitive to pain than man, *some* animals are more sensitive than *some* people (*e.g.*, certain monkeys, horses, dogs, etc.). One of my three Pekinese dogs whines even before you touch him.

Yours faithfully,

R. Glave Saunders.

Exeter.

* * * * *

EXPORTATION OF HORSES BILL

To the Editor of the Veterinary Record

Sir,—We, the undersigned, owners, breeders, trainers and professional riders of horses, and Members of Parliament for constituencies interested in racing or previously in charge of a former Bill, desire to urge the early passage into law of Mr. E. A. Radford's Exportation of Horses Bill, which was read a second time on March 5th.

We do so on the following grounds:—

(1) "Aged" horses which, though still fit to travel and to work, are past their prime and nearing the end of their working days are, under existing legislation, permitted to be exported for butchery abroad or for further work where neither law nor public opinion adequately protect them.

(2) Horses exported ostensibly for slaughter are known to be used abroad for further work.

(3) Young and valuable horses, if exported, are, as a rule, well treated.

(4) Old horses of little value, on the other hand, when exported, frequently fall into the hands of persons who are wholly insensible to the sufferings of animals. They are thus liable to callous neglect and even brutal ill-treatment.

(5) The Exportation of Horses Bill does not interfere in any way with the export of young and valuable horses, nor with other legitimate trade in horses. It is intended to stop the export of work-worn horses only.

(6) The traffic in work-worn horses is officially admitted to exist. It yields but a meagre profit to breeders and dealers in this country. It is now at a low ebb and can, therefore, be prohibited without appreciable loss to any vested interest.

(7) The number of horses exported may increase as the temporary causes of the decrease are removed. The present extent of the traffic is, therefore, irrelevant. A single offence of cruelty to animals is, in this country, punishable. The extent of the traffic affects only the degree of cruelty.

(8) The Bill identifies a work-worn horse by its age and value. A qualified veterinary surgeon should be capable of expressing a reliable opinion as to the age and value of any work-worn horse.

(9) An outlet for such horses, which the dealers now seek abroad, could be provided in this country by placing on a sound footing the trade in dressed carcases and by-products.

(10) The passage of the Bill would ensure a humane end in this country to horses who have spent their working lives here and whose export for further work and butchery abroad shocks the conscience of many thousands of sportsmen.

Yours faithfully,

Beaufort.
Crewe.
Lonsdale.
Rosebery.
Harold Nutting.
George Lambton.
Frank Butters.
Gordon Richards.
Fred Fox.
Ralph Glyn.
Frank Heilgers.
J. Henderson Stewart.
Daniel Hopkin.
E. A. Radford.

4, Bloomsbury Square,
London, W.C.1.

February 24th, 1937.

* * * * *

"VET.," "TO VET.," "VETTING," "VETTED"

To the Editor of the Veterinary Record

Sir,—Mr. Henry Gray's letter appearing in a recent *Veterinary Record* directs attention to the fact that "vet.," a truncation for veterinary surgeon and regarded by many members of the profession in the past as a vulgarism, or as slang usage, has survived demobilisation and made its formal entry as a part of standard English. Recently in the House of Commons, in reply to a question regarding the drafting of a clause in a Bill, it was stated that the same had been "vetted" by a learned authority before presentation. Anything, it appears, may now be vetted—horses, drains, Parliamentary Bills, etc.—to say nothing of candidates for Benedictine honours.

It seemed inevitable, however, that, in the course of time, "vet." would oust "veterinary surgeon" and be commonly used in general conversation. Partridge—"Unconventional English"—says: "There is a remarkable English tendency to use monosyllables, this beginning in school—maths., prep., trig., etc., while truncation generally goes on all the time among grown-ups."

In the early 'twenties a Commission sat at Plymouth under, I think, the chairmanship of Lord Clinton, to inquire into the origin of an outbreak of rabies in the south and west of England. The late Mr. John Dunstan, of Liskeard, during his evidence, offered a protest against the Chairman using the term "vet.," but time brings changes.

I remain,

Yours truly,

F. T. Harvey.

Penmellyn,
St. Columb,
Cornwall.

February 23rd, 1937.